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Original Communications.

THE RESULTS OF THE TREATMENT OF FOUR HUNDRED AND EIGHT CASES OF TYPHOID FEVER, WITH A REPORT OF EXPERIMENTS WITH A NEW METHOD.[1]

BY H. G. MCCORMICK, M.D.,
Physician to the Williamsport Hospital, Pennsylvania.

Twice I have read papers before the Lycoming County Medical Society giving my experience in the management of cases of typhoid fever. To-day I shall add a third covering seven years, during which time four hundred and eight cases were treated. It was urged as an argument against the treatment advocated in my former papers, that one hundred cases were not sufficient upon which to base conclusions as to the efficiency or non-efficiency of any particular method of treatment. This I suppose is true. Again, it was urged that the treatment of a certain number of cases with good results in any one year did not of necessity prove that the plan pursued was superior to any other; for all who have had much experience in the management of this disease know that different epidemics in different seasons show a wide variance in the severity of the attack. With this number of cases, namely, four hundred and eight, covering as it does a number of years, the severity of the attack in at least three of which cannot be questioned, we should be able to have a basis upon which all could agree for judgment of the success or fail-

[1]Read at the meeting of March 14, 1903.

ure of the treatment as given in my former papers.

In order to arrive at the mortality rate of typhoid fever I have taken the reports of a large number of hospitals throughout the country. I find that the Allegheny General Hospital treated 100 cases with 17 deaths, a mortality of 17 per cent; the Pottstown Hospital treated 8 cases with the death of 6, a mortality of 75 per cent; the Philadelphia Hospital treated 137 cases with 14 deaths, a mortality of 10.2 per cent; the Presbyterian Hospital treated 215 cases with 27 deaths, a mortality of 12.5 per cent; the Harper Hospital, Detroit, Mich., treated 22 cases with 4 deaths, a mortality of 18.2 per cent; the Mercy Hospital, Pittsburg, treated 316 cases with 61 deaths, a mortality of 19.3 per cent; the Conemaugh Valley Memorial Hospital treated 119 cases with 15 deaths, a mortality of 12.6 per cent; the Boston City Hospital treated 362 cases with 45 deaths, a mortality of 12.4 per cent; the Johns Hopkins Hospital, Baltimore, treated 134 cases with 13 deaths, a mortality of 9.7 per cent; the Salem Hospital treated 22 cases with 4 deaths, a mortality of 18 per cent; the City Hospital of Quincy treated 28 cases with 3 deaths, a mortality of 10.7 per cent; the Arnot-Ogden Hospital, Elmira, N. Y., treated 17 cases with 2 deaths, a mortality of 11.7 per cent; the Jefferson Medical College Hospital treated 73 cases with 8 deaths, a mortality of 11 per cent; the Hospital of the Protestant Episcopal Church, Philadelphia, treated 182 cases with 17 deaths, a mortality of 9.3 per cent; the Pottsville Hospital treated 15 cases with 3 deaths, a mortality of 20 per cent; the German Hospital, Philadelphia, treated 248 cases with 26 deaths, a mortality of 10.5 per cent. The grand total is 1998 cases, with 265 deaths, an average mortality of 13 per cent. This probably would be a fair average of the mortality rate in this disease.

Of the 408 cases that I treated I had 22 deaths, a mortality of 5.4 per cent. I think it might be interesting to consider in detail the features of these lost cases, to find, if possible, a reason for the fatality of the same; that the mistakes of management, if any were made, might be avoided in the future.

Case I.—No. 2882. M. M., aged twenty-seven. Admitted September 25, 1895. Had been sick for ten days. Admitted with temperature of 104°, pulse of 110. This person had been transported for a distance of fifty or sixty miles in an ordinary railway coach, and walked from the station to the hospital, a distance of one-fourth mile. He died on October 4, 1895. Post-mortem showed perforation six inches above the ileocæcal valve.

Case II.—No. 4746. M. Mc., aged nineteen, male. Admitted September 19, 1898, giving the following history: Two years ago he had an attack of inflammatory rheumatism, which lasted six months. After recovering from this he worked at day labor, suffering little inconvenience. In April, 1898, he enlisted in the Twelfth Regiment, Pennsylvania Volunteers; was sent to Camp Alger, and from there to Camp Meade. While here he was taken sick on the 9th day of September with severe headache and chill; slight diarrhea. Complained of feeling very weak. He had some fever. The physician in attendance would not allow him to come home until September 15, at which time he walked to the train, sat up in an ordinary coach a distance of 120 miles, and was taken from the train to his home in a carriage, a distance of about a mile. He remained at home in bed until the 19th, being treated by a physician who, he said, gave him sweating powders. At this time he left his bed, walked to a carriage, was driven a mile to a railway station, walked into the train, and came to the hospital. On admission his temperature was 104°, pulse 118, respiration 30. Pulse was exceedingly weak and irregular. Some diarrhea. On examination rose spots on the abdomen, a mitral murmur, an irregular pulse, and great exhaustion were found. His pulse continuned to increase in frequency, with corresponding increase in respirations. He died on the 23d day of September, 1898, four days after admission, as the result of his heart lesion.

Case III.—No. 4763. Mrs. A. W., aged twenty-two years. Was admitted September 23, 1898, with a temperature of 104.4°, pulse 140, and with a history of having suffered for the past four years from Bright's disease. It was stated that she had been sick two weeks at the time of her admission, and had been hauled in a

wagon a distance of nine miles. Examination of urine showed a large quantity of albumin with casts. Her temperature continued high, ranging from 103° to 105°. On October 1 she had a convulsion with almost complete suppression of urine. She died on October 2, 1898, from uremia.

CASE IV.—No. 4840. S. W., aged twenty-six, male. Was admitted October 20, 1898. Had been sick fifteen days, the first week of which he continued to do his work on the farm. He was brought to the hospital in a wagon, a distance of nine miles. On admission his temperature was 104°, his pulse 100. He became wildly delirious, and soon after admission had a hemorrhage of considerable size, which was followed by two more the next day, the temperature still remaining high. He vomited persistently. On the 23d he had another hemorrhage, and on the 24th a profuse one, from which he died in collapse.

CASE V.—No. 4862. Miss L. K., aged twenty-five. Admitted October 31, 1898. Had been sick for two weeks. On admission her temperature was 104°, pulse 108. Albumin and casts were present in her urine. Two or three days after admission she vomited; the vomiting persisted throughout the attack. She died from exhaustion and uremia on November 14.

CASE VI.—No. 4942. W. T., aged twenty-five, male. Admitted December 11, 1898. Had a history of having been sick twelve days. On admission his temperature was 104.2° and his pulse 112. Albumin in urine; no casts. He spit a considerable quantity of blood from the lungs on the second day after admission, which he continued to do daily throughout the attack. On the 14th he became very tympanitic; although the bowels were kept open the tympany continued. His pulse became very weak and rapid. He died suddenly on the 17th.

CASE VII.—No. 5486. C. Y., aged thirty-eight. Admitted August 28, 1899. He was a very large German with an excessive amount of fat. Two weeks previously he had a chill, followed by a headache, pain in back, diarrhea which persisted up to the time of his admission. He had continued to look after his business, that of a merchant, up to the time of his admission to the hospital. On admission his temperature was 103° and his pulse 110. He had rose spots over the abdomen. The disease ran a moderate course, with temperature ranging from 103° to 104½°, and with a pulse from 90 to 100. His respirations at times were rapid, ranging from 40 to 50. On the 7th of September he passed some blood-clots, and again on the 12th and on the 13th; his temperature gradually declining, ranging from 101° to 103°. On the night of the 16th of September, at 12, the patient was in good condition; the pulse full, respiration 28. He was somewhat tympanitic, for which turpentine stupes were applied over the abdomen. At 1.50 A.M. the nurse saw him sleeping quietly. At 2 A.M. he took his medicine, turned over in bed, and immediately expired.

CASE VIII.—No. 5502. J. H. F., aged thirty-six. Admitted September 5, 1899. Gave the following history: Had chronic rheumatism the last three or four years, necessitating the use of crutches a considerable part of the time. Had been sick eight days prior to his admission. On examination found the abdomen quite tympanitic, with marked tenderness over the right iliac region and over the spleen. Tongue was furred, except the tip. A mitral regurgitant murmur, heard loudest at the apex of the heart, was noted. His temperature on admission was 104 1/3°; his pulse 112. Case ran a severe course. On September 20 he developed rheumatism in elbow and shoulder, with an increase in temperature and rate of pulse. On the 24th he redeveloped an endocarditis, from which he died September 26. Albumin was present in the urine from time of admission.

CASE IX.—No. 5599. Mrs. G. E., aged twenty-one. Admitted October 18, 1899, with temperature of 104.4°, pulse of 126, and respiration 48. Gave a history of having been sick three weeks, being attended by three different physicians. When admitted patient was wildly delirious, screaming at the top of her voice. Urine passed and bowels moved involuntarily. She died of exhaustion on the 20th, less than forty-eight hours from admission.

CASE X.—No. 6380. R. V., aged forty-six, male. Admitted September

27, 1900. Wood-carver by trade. Gave history of having been sick about ten days. Case ran a moderate course without any marked complications until October 26, when he had a sudden rise of temperature, it reaching 105°, where it remained, resisting both cold applications and guaiacol externally and hypodermically. He had frequent chills, followed by profuse perspiration, until November 4, when he died from exhaustion. He had a number of hemorrhages. A large decubital gangrenous ulcer appeared over the sacrum. This man was a heavy drinker.

Case XI.—No. 6389. Mrs. L. J. K., aged thirty-three. Admitted September 30, 1900. She gave a history of having been sick two weeks. Was transported in a butcher wagon a distance of eight or nine miles, and was greatly exhausted on her arrival at the hospital. Temperature 104°, pulse 140, decided tympanites. The case was one of well marked toxemia. She soon became wildly delirious, and required constant restraint to keep her in bed. The third day after her admission she had a small hemorrhage. The delirium continuing, she was given a hypodermoclysis, when she immediately fell asleep, sleeping for a period of four hours. From the time of her admission her pulse was weak and rapid, and would not respond to ordinary stimulants. The moving of this woman was an important factor in the severity of the disease, as it was stated by her physician that she was in fair condition when she started on her journey to the hospital. She was a woman debilitated from the bearing and nursing of a large family of children. She died of exhaustion on October 11, 1900, eleven days after admission.

Case XII.—No. 6391. Mr. J. H., aged thirty, woodsman. Admitted October 1, 1900, with the following history: He had been sick in bed for two weeks in a small town seventy-five miles from the hospital. He was a man of powerful physique. After being in bed two weeks he determined to come to the hospital. He rode in a buggy twenty miles over a mountainous road, probably the roughest in the State. Then he took a train, riding in an ordinary coach. He walked from the station to the hospital, carrying a heavy valise. He was admitted in the middle of the night. On admission his temperature was 104° and his pulse 120. He soon became delirious, temperature continuing high. Delirium was of muttering character. Marked subsultus existed. He was very tympanitic when he came to the hospital. Five days after his admission pain developed in the left side, the pain at times being very severe. Hypodermoclysis was given. He was a man addicted to the use of alcohol. He died October 16, 1900.

Post-mortem was made. The following conditions were present: The abdomen was distended. Some fluid was found in the small intestines. There was slight peritonitis, the bowels being glued together. The pancreas, which was four inches wide at the base, showed an infarct which was situated near the head of the organ, and had just reached the stage of softening. Spleen was enlarged to three or four times its natural size. There was a marked local peritonitis. The liver was enlarged, especially the left lobe, and extended about three fingerbreadths to the left of the midsternal line. The liver also showed marked evidence of jaundice and was mottled in color. Two abscesses were found in the left kidney, the larger abscess containing a drachm of pus, the smaller about one-third of a drachm. It had been found necessary to catheterize this patient throughout the attack. There was multiple ulceration of the small intestine extending practically over the lower three feet of the same. All of the ulcers were in a stage of necrosis. The peritoneum covering these ulcers were markedly thickened. There were no perforations.

Case XIII.—No. 6431. Miss B. M., aged sixteen. Was admitted to the hospital on October 14, 1900, being transported on a cot. She had been sick about one week in a lumber camp, and had been transferred on a log car for a distance of seven miles down the mountains. She was hauled on the railroad about forty miles. On admission the patient was found to be in fairly good condition, but marked tympanites was present. No delirium. Her fever ran a course ranging between 102° and 103° for about one week, slight nervous manifestations being present. Then she became constipated, which condition was followed by enor-

mous distention of the abdomen and marked nervous symptoms. She gradually passed into a comatose state, her fever ranging from 104° in the morning to 106° in the evening, and resisting both cold baths and the application and injection of guaiacol. Her pulse on admission was 120, but rose to 160, and later became so rapid that it could not be counted. During the last three days a diarrhea developed. She had one large hemorrhage and several small ones. Her heart continued rapid and weak, until she died from exhaustion on November 5, 1900.

CASE XIV.—No. 6450. Mrs. E. R., negress, aged twenty-five; washerwoman. Admitted October 22, 1900, giving a history of having been sick three weeks. On admission was tympanitic, pulse 120, temperature 104°, with a very irritable stomach. This patient gave a history of having done the family washing the day before admission, being thereby so completely exhausted that she was compelled to go to bed. Two days after her admission her temperature became very high and her pulse very rapid and weak. She did not react to stimulation, and hypodermoclyses had no effect. She had no hemorrhages. She died on October 28, 1900, of cardiac exhaustion.

CASE XV.—No. 6499. Miss E. C., aged eighteen. Was admitted November 12, 1900, at midnight, and gave the following history: Had been sick about two weeks, but did not go to bed, as she was compelled to work. Two days before entering the hospital she went to a neighbor's house, and went to bed. She was taken out of bed, dressed, and helped to the train, where she was put in an ordinary railway coach without any one to look after her. She rode from Galeton to Williamsport, a distance of 110 miles; she was so weak that when the train was wrecked at Newberry she fell on the floor, and was unable to get back on the seat until assisted by a trainman. At the station she was placed in the ambulance and brought to the hospital. On admission she was very weak, with pulse 130 and temperature 103°. Her abdomen was distended and she was delirious. Her fever ran a moderate course, ranging from 103° to 104° for about two weeks, when she had several small hemorrhages. Her pulse continued very rapid, and she developed marked subsultus. She did not react to stimulation nor to hypodermoclyses. About five days before her death she developed facial erysipelas, which extended over the whole face, the eyes being swollen shut. After this she had several small hemorrhages. Her pulse became very weak and so rapid that it could not be counted. Temperature ascended to about 106°, and was entirely uncontrollable. She sank into a comatose state, from which she did not rally, and died on December 11, 1900.

CASE XVI.—No. 6538. Miss M. M., nurse, aged twenty. Was admitted on December 1, 1900, having been sick about a week. Her case was a moderate one the first week. The temperature ranged from 102° to 103°. At this time another patient with a markedly cadaverous face was placed in the same room with her. Within two hours her temperature suddenly shot up to 104°, and the next day reached 105°. She was exceedingly wakeful and very nervous, talking constantly. She was placed in another room, with the hope that her nervous condition might be relieved; but it persisted, and it was almost impossible to get her to sleep. She was given all the hypnotics both by mouth and rectum, they producing little if any effect. For five days and five nights she did not sleep to exceed three hours, and this only at short intervals. Camphor produced the best results. Her temperature and pulse continued very high, the former being from 104° to 105½°, and the latter from 124 to 140. Nausea developed, and it was impossible to keep anything on her stomach. She died from exhaustion January 3, 1901.

CASE XVII.—No. 6558. G. A. P., aged thirty-one, male. Admitted December 12, 1900. Gave history of having been sick one week. He was a thin, spare, frail-looking man. His temperature on admission was 102.4°, pulse 100. The case was a moderately severe one, with no particular complications until December 28, when he suddenly developed a pneumonia on the left side, involving the entire left lung, from which he died January 1, 1901. His father and mother died of tuberculosis when he was a child.

CASE XVIII.—No. 7253. C. Mc., aged twenty-six. Admitted September 7,

1901. Walked into the hospital, at the time under the influence of liquor. Had traveled twenty-five miles. Widal reaction positive. Temperature 103 3-5°. His temperature continued high throughout the whole attack. His pulse was very weak and irregular, reaching as high as 144 on October 2, 1901. He was a man addicted to the use of liquor. He died October 2, 1901. Post-mortem: The cæcum and the transverse and ascending colon were ulcerated down to serous coat. The ulcers were not in an active stage of congestion. The mesenteric glands were enlarged. The appendix was ulcerated opposite its mesenteric attachment. One of these ulcers had perforated the appendix. The small bowel was ulcerated, but the ulcers were not in an active stage. The urine on October 7 showed albumin with narrow hyaline casts, and a few leucocytes. Post-mortem showed left kidney congested and enlarged, right kidney slightly also. This man was delirious from the second day; he was difficult to control. His respirations were rapid, and his general condition from time of admission was bad. He was treated in the usual manner, and during his attack was given at different times six quarts of normal salt solution under the skin.

Case XIX.—No. 7338. O. W., aged twenty-one. Admitted October 9, having been sick one week. He had been hauled for a distance of twenty-four miles in an open wagon over a mountainous road. His temperature on admission was 103.2°. Five days after admission he commenced to vomit, which symptom was very persistent for five days, so much so that he was unable to retain nourishment or medicine. At the end of three days more his vomiting again returned, and he could not retain nourishment of any character. He vomited some blood. He died November 22, 1901, of exhaustion. No post-mortem.

Case XX.—No. 7339. E. W., aged twelve years, sister of above. Admitted October 9, 1901, under the same circumstances as last case. On admission her temperature was 102 3-5°, pulse 120. Her temperature rose soon after admission, and continued high throughout the attack, reaching as high as 106°. She had nausea from time of admission, and refused all nourishment. She had a hemorrhage October 25, another on the 28th, and another on the 30th. She died November 1, 1901, from exhaustion.

Case XXI.—No. 7351. Mrs. J. W., aged twenty-four. Admitted October 14. She was hauled in a butcher wagon for a distance of twenty miles. She had been sick since October 1. She had high temperature from admission, it reaching 106°, with very weak pulse. On the day following admission she had a severe nosebleed, one again on the next day, and two days after two such bleedings. They were all severe, and difficult to control, only yielding to applications of strong solution of suprarenal extract. The nose continued to bleed every day until October 28. On November 6 she had a large hemorrhage from the bowel, and on November 11 another. She died from exhaustion on November 14, 1901.

Case XXII.—No. 7369. Mrs. O., aged twenty-nine. Admitted October 25, 1901. Had been sick about one week, and was shipped sixty miles on a railroad train. She was an exceedingly fat woman, weighing over 200 pounds. On admission her temperature was 102 3-5°, pulse 132 and intermittent. She was delirious and nauseated. Her temperature rose rapidly, and her pulse grew weaker and would not respond to stimulants. She died from exhaustion on November 6, 1901.

Of the 408 cases treated 239 were males and 169 females. Age: 33 under 10 years; 101 between 10 and 20 years; 182 between 20 and 30 years; 58 between 30 and 40 years; 28 between 40 and 50 years; 6 above 50 years.

Guaiacol was applied for the reduction of temperature 3150 times.

Hypodermics of guaiacol were given for the reduction of temperature 764 times. The greatest number of such hypodermics given to any one patient was forty-six, the average number being eighteen.

Hemorrhages occurred in forty-six cases.

The Widal reaction was positive in 94 per cent of the cases.

The diazo-reaction was positive in 77 per cent of the cases.

Fifty-eight cases had relapses.

Albuminuria was present in 56 per

cent of the cases. Albumin with casts was present in fourteen cases.

Jaundice was present in two cases; severe in the one, mild in the other.

Polyuria was present in four cases.

Six cases had a second attack and one a third attack.

Erysipelas was present in two of the cases.

Infarction of the spleen was present in one case in which post-mortem was made.

Abscess of the kidney occurred in two of the cases.

Purpura rheumatica was present in one of the cases.

Acute cardiac disease was present in four of the cases.

Pneumonia was present in nine of the cases.

Eruption was noticed in 78 per cent of the cases.

Epistaxis was present in 108 of the cases.

Furunculosis and external abscesses were present in twelve of the cases.

Phlebitis was present in eighteen of the cases.

Orchitis was present in three of the cases.

Neuritis was present in seven of the cases.

Three of my cases were pregnant when attacked with the disease. One was confined at full term, the child surviving. The labor was a short and easy one. One case aborted at six months on the twentieth day of the disease. She made a good recovery. The third case went to full term.

There was a symptom present in a number of cases treated in the fall of 1901 that was entirely out of the ordinary, viz., chills.

Chills.—A number of my cases had frequent chills without any assignable cause. There was no periodicity in their occurrence. They were very severe, and were followed by sweating. One case in a young man, with no other complications, manifested chills nearly every day for two weeks. His blood was repeatedly examined for malarial poisoning, but the plasmodium was never found to be present. There was no evidence of pus formation in any part of his body. With the subsidence of the fever the chills also subsided, and the young man made a good recovery.

There was one case that presented marked jaundice. The Widal reaction showed clearly in his blood before, but disappeared after, the development of the jaundice. The question might be raised as to what part the bile plays in neutralizing the poison of typhoid in the blood. It did not in my case in any way mitigate the severity of the disease; for it ran an uninterrupted course of twenty-four days; and the jaundice gradually disappeared.

Of the twenty-two cases that died, only five of the deaths could in any way be charged to hemorrhage, though of the twenty-two cases that proved fatal seven had hemorrhages. In two of these the loss of blood was so slight that it made no perceptible impression upon them.

Of the twenty-two cases that proved fatal, only one was seen prior to the seventh day of the disease. Ten of these cases were brought to the hospital in rough wagons, after having been hauled from nine to twenty-four miles, or after having traveled in railroad trains, three of them having gotten out of beds of sickness and traveled in an ordinary coach.

I am thoroughly convinced that this mortality rate might have been much reduced had these cases been moved in a different manner. I find that the moving of typhoid fever patients after the seventh day should be done with great care and always in reclining position, and that they should never be allowed to be upon their feet.

One of the fatal cases was seen by me but thirty-six hours before death; another I attended but three days.

The pupil was dilated in about 96 per cent of cases. The dilatation usually appeared early; and in a few cases that were seen from the onset this symptom was present from the beginning. It is so constant a symptom that it can be made use of in determining diagnosis. At times the pupil is very largely dilated, having the appearance of one enlarged by atropine.

As to the complications I met with in the treatment of these cases, two of them had acute dilatation of the heart. In the first such case, that of a young man who had been removed from Fort Meyer to

our hospital, the fever ran a moderate course of twenty-four days. After the temperature had been normal a week, while using a bedpan for the movement of the bowels, the patient was suddenly taken with a pain over the heart. His pulse became too weak and rapid to count, and he went into collapse. The nurse at once gave him a hypodermic of nitroglycerin and strychnine, and I was summoned to see him. I found him with a slight pain over the heart, having great difficulty in breathing, and with a very weak pulse—in short, with every symptom of collapse. He remained in a dangerous condition for several hours, his pulse gradually becoming perceptible. His circulation continued bad for several weeks. He was unable to undergo any exertion of any consequence for some months. I examined his heart two years after the attack, and found it enlarged three-fourths inch to the left of the nipple. There was no murmur at this time, and he was able to perform the duties of life, suffering no inconvenience from his circulation.

The second case of this kind was that of a nurse who had gone through a rather mild case of typhoid fever running nineteen days, and had been having a normal temperature for a week. One evening, without any assignable cause, while turning over in bed she developed the same train of symptoms as had the other case, although in not quite so severe a form. We had, however, great trouble for several days stimulating her circulation. She was unable to go on duty for six months following. One year after the attack I examined her heart, and found it enlarged about one-half inch to left of nipple line, but could not find any murmur. She now performs her duties without any inconvenience. In neither of these cases had the patient been greatly prostrated as an effect of the disease. In both the temperature had been normal for a week. Neither of them had any heart trouble before.

These cases should impress upon us that even following a mild attack of typhoid fever there is danger of an acute dilatation of the heart for some time after the temperature has been normal.

Another case of marked interest was that of A. J. W., a medical student, aged twenty-five. He was taken sick January 1, 1901, with chills. A few days after the onset of the disease his whole body was covered with a red rash resembling scarlet fever. At this time I was called to see him in consultation with Dr. Glosser, and continued in attendance throughout his sickness. The rash faded from the body, except the abdomen, where it continued throughout the attack. The case ran a moderate course, the temperature ranging between 102° and 104°, until January 26, when it reached normal. There was no albumin in the urine. The temperature remained normal for four or five days, when it again went up and remained between 100° and 101°. On February 4 the patient complained of a pain in the left leg with some twitching of the muscles. The urine was now found to contain large quantities of albumin with a few casts, and he was passing very little of it. On February 5 he had a marked convulsion, after which he passed into a profound stupor, which lasted three hours. He vomited freely on regaining consciousness. The pulse was intermittent, and he complained of cramping pains in both lower extremities. On February 6 he passed 20 ounces of urine which contained pus. During the next three days he had several convulsions, and passed but small quantities of urine. His temperature was normal, and his pulse ranged from 120 to 140. On February 8 he passed more urine and less pus, and increasingly so until February 13, when he passed 113 ounces of urine in twenty-four hours. The flow of urine continued free, 100 ounces or more passing for several days following. He gradually continued to improve, the urine showing some albumin until March 1. He made a good recovery.

A boy seven years of age was admitted to the hospital September 10, 1901, and discharged December 4, 1901. His case ran a very severe course with high temperature, and with rapid pulse, ranging from 130 to 156. When the fever subsided the whole body became swollen. The eyes were swollen shut. The lumbar region and the abdomen were very tense. At some points there was pitting on pressure. The child cried and moaned as if in pain. His urine was clear, amber-colored, and without albumin, casts, or sugar.

The diazo-reaction had disappeared. Following the disappearance of the swelling his temperature rose, and he had a relapse lasting eleven days.

A man, aged nineteen, was admitted to the hospital September 24, 1901, and discharged January 5, 1902. He gave a history of having been sick ten days. He had been allowed to eat solid food up to the time of his admission. When admitted he had a temperature of 101° and pulse of 100. On the third day after his admission he complained of some pain in the abdomen. His temperature came down to normal in two hours after the pain. His pulse was weak, and the pain still continued in abdomen. Some time during the night his temperature reached 96°, and he vomited considerably. He was unable to retain any nourishment. There was no tympanites, and only a little pain; but there was persistent nausea with hiccough. The following morning Dr. Nutt opened the abdomen along the right rectus muscle. He found the bowel covered with large flakes of inflammatory lymph, and the intestine adherent to the abdominal wall. There was a perforation of the ileum along its mesenteric attachment six inches above the ileocæcal valve about one-half inch in diameter. The opening was closed with silk. Two points a little further up the ileum were found to be nearly ulcerated through, and were reënforced with silk. The abdomen was filled with a thin yellowish fluid having a fetid odor, and containing fecal particles.

The abdomen was thoroughly flushed with hot salt solution, and was then drained with four pieces of iodoform gauze, 1½ inches broad. The wound was closed with through-and-through silkworm-gut. The gauze was removed on the third day. The nausea was relieved in twenty-four hours, and the patient was able to take some nourishment. The case continued to improve. Twelve days after the operation there remained a small fistula at the point of incision. His bowels being constipated the patient was given an enema, when it was found that a part of the enema containing small particles of fecal matter slightly colored was discharged through the opening in the abdomen. Two days after an enema was given with a like result. The fistula was then packed, and upon removal of the packing was touched with silver nitrate. The young man then made an uninterrupted recovery. This case proves that in some instances at least fluid can be passed through the ileocæcal valve.

A man aged twenty-nine years was admitted on October 30, 1901. He had been sick about seven days. The next day after admission he developed erysipelas. This ran a course of five days. Erysipelas is a very rare complication of typhoid fever.

Treatment.—The general treatment pursued in this series of cases was as follows: The patients were first given a bath for cleanliness, and calomel was given to move the bowels. They were then given guaiacol either in emulsion or in capsules, in two-minim doses, every two hours. This was sometimes combined with four minims of eucalyptol. If this was not well borne guaiacol carbonate in three-grain doses every two hours was substituted.

The bowels were kept thoroughly open each day, first with calomel, and after this with magnesia sulphate, soda sulphate, licorice powder, or other laxative. I frequently gave a pill, composed of one-eighth grain podophyllin, one grain blue mass, and one grain of thymol, every three hours until the bowels moved. The colon was washed out daily with a normal salt solution; if the temperature was 102½°, or more, this was given cold; if below that degree it was given lukewarm. The mouth was thoroughly cleansed twice a day, or oftener if necessary. Water was given in large quantities, the patients being encouraged to drink as much as possible. Sometimes three or four drops of dilute hydrochloric acid was added to the water to render it more palatable.

If there was any tympanites, which rarely occurred, turpentine emulsion was given in five-drop doses. The guaiacol was given entirely for its antiseptic effect upon the intestines. If the circulation was weak one-thirtieth grain of strychnine was given every three hours. This was the general treatment employed when there was no complication.

The problem of rendering the bowel as nearly aseptic as possible in the treatment of cases of typhoid fever has passed beyond the experimental stage. That this mode of treatment renders the best results

I think is borne out by the statistics I have offered here to-day.

So far as cold baths are concerned, they are largely the treatment of a symptom of the disease, rather than the treatment of the disease itself. Even if cold baths do all that is claimed for them, there are a large number of cases in which they are not applicable. None, I think, advise the giving of baths with a temperature below 102½°. Cases having a lower temperature than this under this plan would receive no treatment whatever.

One of the most severe cases of hemorrhage that I met with was in a young man whose temperature never was above 102°.

Camphor was used as an arterial stimulant in a number of cases with very good results. This was particularly true when there were nervous symptoms present, and when there was a tendency to wakefulness.

The local application of guaiacol for the reduction of temperature has proven so effective and safe a remedy in my hands that, after having thus applied it 3150 times, I can assure you, if properly used, it will give you the same gratifying results.

When I first used this remedy I applied from 15 to 30 drops; but after more experience in its use I find that this amount is entirely unnecessary, as the same and even better results can be obtained by the use of from 5 to 10 drops. During my last two years of service 9 drops was the largest amount that was applied at any one time, and this only in a few instances, the average being 6 drops.

In order to produce the desired effect it is important that care be used in its application. The point selected for the purpose is usually the right iliac region; but I consider this of but little importance. I have used it at many other points, but the point indicated will be found to be the most convenient both for the patient and the nurse.

The region must be thoroughly cleansed with soap and water, and thoroughly dried. A little ether or alcohol is then applied to remove the oil from the skin. The guaiacol is then slowly dropped upon the surface, and thoroughly rubbed in with the hand for from ten to fifteen minutes. The part is then covered with oiled silk or waxed paper.

The only preparation of guaiacol that I found to be reliable is Merck's. I have tried others, but they always disappointed me. Occasionally the guaiacol produces a local irritation; if this should be the case a new point for its application must be selected.

The antipyretic effect of guaiacol lasts from two to four hours. The more often it is applied the greater the effect.

When I first commenced the use of this drug to control fever I found that a chill was the occasional result of the sudden reduction of temperature. But after I became better accustomed to its use chills rarely occurred. If it can be avoided the temperature should not be reduced more than about three degrees; and this can easily be regulated after a few applications are made. I have seen quite a number of severe chills, yet I have not seen any bad results follow; and I am sure that the statement made by some authors that congestion of the internal organs might be the result has not been borne out by my experience, for I have had few cases of pneumonia as a complication in typhoid fever; and even these few cases could in no way be traced to the use of guaiacol.

It has been stated by some authors on therapeutics that guaiacol is a depressant, and for this reason is a dangerous remedy in any disease where the circulation is likely to suffer from long-continued fever. The person who originated this statement evidently based his assertion on some fine-spun theory, for if he had had much experience with the drug he would have known the fact to be otherwise. I have used the remedy and observed its action so many times that I know exactly the opposite view to be true. It does not weaken the pulse; on the contrary the pulse grows stronger, fuller, and slower. A weak and rapid pulse is to me no contraindication for its use.

If the application of guaiacol does not make the impression on the temperature desired, I have found that by giving a hypodermic injection of 1/100 grain nitroglycerin just prior to such application the action of the drug is much more prompt and certain, a less amount being required than when the nitroglycerin is not used.

Again, if you should find that the guaiacol is reducing the temperature more than you desire, or if a chill should occur which might cause you or the family some uneasiness, all this can be almost instantly controlled by the hypodermic injection of 1/150 grain sulphate of atropine. Thus you can increase the action of guaiacol by giving nitroglycerin before its application, and you can limit its effect by stopping its further action with atropine.

During the last two years I have been using guaiacol hypodermically for the reduction of temperature, and am very much pleased with its action thus employed. Its acts very promptly and efficiently, producing no bad results.

The use of the drug in this way was inaugurated in the Williamsport Hospital during the time that Dr. R. B. Hayes was resident, and I am indebted to him for careful notes of the cases in which it was used. The amount usually given was two minims; the greatest amount given at any one injection was four minims. The guaiacol was diluted with an equal amount of alcohol, and the injection was rather deep. No abscesses resulted from its use.

One of the latest works on the practice of medicine, written by a college professor, advises as follows in hemorrhage in typhoid fever: "Opium to control peristalsis must be given, by preference hypodermically." And this same author says: "The mortality in cases of hemorrhage in typhoid fever is from 30 to 40 per cent." Dr. R. G. Curtin has treated sixty cases of hemorrhage with a mortality of 46 per cent.

In my former papers I took very decided grounds against this method of treatment, and time has only confirmed my faith in what I then tried to assure you was a more rational and effective plan of treating this complication. Just why textbook writers should continue to assert that opium must be given in this emergency is rather difficult to explain, except that the practice was advocated in the older text-books, and should be honored for its age.

Opium was recommended by some writer several generations ago, and every person since that time "who has been called," as it were, to read a paper on the same subject has kept this treatment alive, supporting it with the absurd explanation that opium controls peristaltic motion. As if peristalsis were an important condition in the case to be met of necessity.

I admit that opium will control peristaltic motion of the bowel. But that there is such peristaltic motion to control after a hemorrhage in typhoid fever I am not willing to admit. When a hemorrhage occurs of sufficient amount to make an impression upon the strength of the body it produces a general relaxation of the whole body, including a relaxation of the muscular system. This is well shown in the arterioles and capillaries, as a result of which we see profuse perspiration. You would, however, infer from those who recommend the use of opium that the muscular fibers of the bowel which cause the peristaltic movement were an exception to the other muscles of the body; and that, instead of their force and strength being reduced by hemorrhage, these were rather increased and stimulated, making it necessary to stop such action by some strong paralyzer of muscular action. And, strange to say, this nonsense continues to be taught and written by those who are looked upon as leaders in modern and effective methods of curing disease. I do not wonder that their mortality is from thirty to forty per cent.

In the cases of hemorrhage which I have been called upon to treat, exactly the opposite plan from that described has been followed. If the circulation demanded it one-thirtieth grain of strychnine nitrate hypodermically was given. A hypodermic injection of 15 to 20 minims of ergot was also given. If the hemorrhage was large, producing a weak and compressible pulse, a hypodermoclysis of one quart of normal salt solution at a temperature of 107° to 108° was made, usually in the hip, sometimes in the mammary gland, and a few times over the kidney. If the fluid was not readily absorbed at the point where the injection had been made, another injection was made elsewhere. Aseptic precautions were taken to avoid infection, and but two abscesses ever resulted. In addition to this the colon was thoroughly washed out with normal salt solution. If the temperature was 100° or more, this solution was given cold; if the temperature was below normal, the solution was given lukewarm. This washing out of the blood that had remained behind

after the hemorrhage removed a fruitful soil for the development of the bacillus, and rendered the colon clean.

In addition to this, many of these cases bleed from the colon, and the water in such cases cleanses the bleeding ulcer. If the water is cold it contracts the blood-vessels, thus aiding in controlling the hemorrhage. If the injection is retained for any time the thirsty glands readily absorb the saline fluid; and you have, in addition to its other benefits, a replacing of the fluid lost, which restores in a degree the arterial tension.

As a further measure I order an ice-coil or ice-bag to be placed over the right side of the abdomen, covering the iliac region, to aid in contracting the blood-vessels. In not a single instance have I given opium or any of its alkaloids; neither have I given acetate of lead. I am convinced that not only is opium of no use in hemorrhage in typhoid fever, but that it frequently produces positive harm. It locks up all the secretions of the bowed, thus causing a decomposition of the food. Gas is formed, and you have as a result distention, tympanites with pressure upon a bowel which has been weakened by ulceration, which increases the danger of perforation. Thus a new complication is added, more to be dreaded than the first.

Even if perforation does not take place from the increased pressure placed upon the bowel, you are in danger of producing a paralysis of the bowel from distention, which is difficult to relieve and is liable to cause death.

I recall a case I saw in consultation, that of a young woman who was at the end of her second week in typhoid fever. Early in the morning she had a hemorrhage of about ten ounces. Her physician was hastily summoned, and applied the treatment as taught in his college, namely, a hypodermic injection of one-fourth grain of morphine. She rested quietly, and he returned to his bed feeling assured that he had controlled all peristaltic action, and that there would be no more hemorrhage. At noon he was again summoned, and found the abdomen greatly distended. He feared to move the bowels, because this was contrary to his teaching. He simply applied turpentine stupes. The distention increased. At six o'clock in the evening I saw her with him in consultation. I made every effort to relieve the gas both by medicine and enema, but without avail. That bowel would not respond to treatment; it was paralyzed by being pressed upon by the gas. The next morning she died. The physician in attendance did what he had been taught; and the responsibility for that young woman's death rests with those who have been teaching that opium should be given for hemorrhages in typhoid fever, a teaching which cannot be sustained either by reason or by experience. Would it not be well for our college teachers to call a halt on this routine instruction of students to give opium when a hemorrhage occurs in typhoid fever, and in its stead to warn them of the dangers that are connected with the practice?

The food plays a very important part in the management of typhoid, and should be selected with the greatest care. Water should be given by the mouth as freely as the patient will take it. Its ingestion in large quantities should be encouraged. Usually during the first week thirst is very decided, and this should be relieved by the giving of water regardless of amount. Later in the disease, especially after appearance of delirium, the patient may not ask for water, but the nurse should be charged to give it freely.

The food selected should be that which will be the most easily digested and assimilated, and no more should be given than can be readily digested. Many physicians suppose that if they give a certain amount of milk each two or three hours they are providing the necessary nourishment. This is an error. There are cases which should be given little if any milk, for some will not digest it. This will be found to be generally true in persons with a temperature above 102° or 103°. I have found that milk is rarely digested by persons suffering from typhoid fever with a temperature above 103°.

Sometimes the addition of Seltzer or Vichy water will render the milk more digestible, and to many it improves the taste.

The stools should be examined, and if undigested milk is found the diet should be changed. I have seen some mild cases which were rendered severe by the continued use of the milk diet when the milk

was not digested. Buttermilk may be given very freely where the patient likes it. It is a most admirable form of diet.

It is far better to give these cases a mixed diet of milk with animal broths and buttermilk than to rely wholly upon any one kind of diet. The moment any one article is found to disagree with the patient it should be immediately abandoned.

The physician must always keep in mind that it is not the amount of food taken, but the amount of food assimilated and absorbed, that nourishes the body. Food undigested is an irritant, and its decomposition forms gases in the alimentary canal—a condition always to be avoided if possible.

For the purpose of determining its value as an intestinal antiseptic, with particular reference to its value in destroying the typhoid bacillus, I had prepared four solutions of acid sulphate of soda. The 15 solution contained 15 grains to 4 ounces of distilled water; the 30 solution contained 30 grains to 4 ounces of distilled water; the 60 solution contained 60 grains to 4 ounces of distilled water; and the 120 solution contained 120 grains to 4 ounces of distilled water. These I gave to Dr. Weddigen, bacteriologist and microscopist to the Williamsport Hospital, without any knowledge on his part as to what they contained, with the request that he report to me the result of their action on the typhoid bacillus. I herewith submit his report:

"Control cultures will be used with all inoculations. All tubes will contain 15 Cc. of neutral bouillon. August 15 tube A. 1 was inoculated with a 24-hour culture of typhoid bacillus and .06 Cc. of solution 15 was added. August 16 tube A. 1 contained bacillus typhoid, which was proved by Widal reaction. The latter took place very slowly. August 15 tube A. 2, inoculated with bacillus typhoid and .12 Cc. solution 15, was added. August 16 tube A. 2 was found to contain typhoid bacilli, as it took three hours to agglutinate in a 1-to-50 typhoid blood. August 15 tube A. 3, inoculated with bacillus typhoid and 1 Cc. solution 15, was added. August 16 tube A. 3 clear and not infected. This shows the drug to be at least an antiseptic to typhoid bacilli in a solution 1 to 1500. August 16 typhoid bacilli 24 hours old in solution 15 equal parts. August 16 tube B. 1, inoculated five minutes later. On the 17th, 18th, and 19th bouillon remained clear. August 16 tube B. 2, inoculated 15 minutes later. August 17, 18, and 19 bouillon clear and not infected. August 19 tube B. 1 plated out on agar. August 23 plate showed no growth. This shows the drug to be germicidal to bacillus typhoid in a solution 1 to 200 in five minutes."

Now, as the previous experiments show, the drug has a decided effect when applied directly to the germ. But as you well know, only a few of the bacilli lie superficially in the intestines, and to reach those in the deeper tissue the blood must be our medium. Celloidin capsules were selected for this purpose, as they admit of free osmosis, and therefore perfect nourishment to the germ, but do not allow any phagocytosis. Under these conditions the bacilli always increase in virulence.

September 25 a celloidin capsule filled with a 24-hour culture of typhoid bacilli obtained from the spleen of a fatal case (Impson, Williamsport Hospital, Aug. 25, 1901) was put into the abdominal cavity of a guinea-pig (used because the normal serum of the guinea-pig has no agglutinative action on typhoid bacilli). September 25 treatment of pig started with .03 Cc. solution 15 and 5 Cc. distilled water. This was given A.M. and P.M. for twenty-five days. On the twenty-sixth day the pig was sick and treatment discontinued. On the twenty-seventh day the pig died. Post-mortem revealed the following: Pig fairly well nourished; had lost about 20 grammes in weight. Abdominal cavity opened; capsule found behind the stomach, and had occluded the transverse colon; bowels distended; peritoneum normal. Pig had died from obstruction of bowel. The capsule was thickly covered with leucocytes, which is unusual. Now I think this increase in leucocytes around capsule was very significant, as it would indicate an increased phagocytosis. This is the first step nature takes to resist any bacterial invasion, and typhoid is unlike most of the other infections in that it presents no leucocytosis. In fact, often a leukopenia is manifest, which I think ac-

counts in a measure for the asthenic type of disease. October 24 bacillus from the capsule did not show a positive Widal in a dilution of 1 to 50, as it did before putting in the pig. At the end of three hours it was positive. Now this shows that the bacilli in capsule had lost some of their virulence. Now, phagocytosis could not play any part in this process, as the capsule had protected the germ from any phagocytic action. This action must have been a chemical one. To prove this two flasks, each containing 200 Cc. of neutral bouillon, were inoculated with a virulent typhoid bacillus. The flasks were put in an incubator for two weeks. At the end of this time the cultures were filtered through a Berkfield filter. To the first pig was given 20 Cc. of this filtrate mixed with 5 Cc. of solution 15. To the second pig 20 Cc. of filtrate was given. In both cases filtrate was given hypodermically. Pig No. 1 did not show any symptoms of typhotoxin poisoning. Pig No. 2 died in eighteen hours from convulsions, profuse diarrhea, and paralysis. These symptoms, you well know, are due to typhotoxin. Now I do not believe the soda solution is a physiological antidote, but a purely chemical one, as its action was to neutralize the toxin, which is a strong alkaline base, the soda solution being equal in acidity to .395 normal hydrochloric acid, which is almost twice as strong as the acidity of normal gastric juice. Now if this solution does neutralize the typhotoxin, it will combat some of the gravest typhoid symptoms, since this toxin is said by Malroy to be the cause of proliferation of the endothelial cells of the lymphatic apparatus and the blood-vessels of the intestines. This phenomenon causes swelling of the lymphoid elements of the intestines; and the secondary necrosis and ulceration of Peyer's patches and the solitary lymph follicles are due to the closure of the small veins and capillaries by these cells, resulting in fibrinous thrombi. These focal lesions may also form in the kidney, heart, liver, and testicles—in fact, in almost any part of the body—and they form some of the most frequent complications of the disease. The lesions of typhoid certainly bear a more direct and important relation to the toxin than to the action of the bacillus itself.

The only bacteriological observation on the human subject was four cases in which the blood showed a positive Widal prior to treatment; three showed only a partial agglutination at the end of one week, while one was negative. This circumstance I do not understand, as the substance causing the Widal reaction is not definitely known. It is thought by some observers to be a toxalbumin; and the latter substance is thought by Stengel to be an impure toxin. If this is the case we can easily explain why the blood of these patients loses its agglutinative power, since we well know that typhoid cultures show some agglutination in themselves. We also know they form typhotoxin. Johnston avoids this pseudo-clumping in bouillon by transplanting a one-month-old agar culture into an acid bouillon. This demonstrates that an acid has the power of destroying agglutination. This being the case, why is it not the neutralizing of this substance that attenuates the virulence of the infection, and inhibits the growth of the germ? We also know that typhotoxin is only eliminated by the germ after it has grown for some time. This would account for the reaction not being present until the infection is well established, which is usually after the fifth day. The question has been asked me if this acid would not neutralize the pancreatic juice and prevent its emulsifying action. No, it would not; as a rancid fat, that is a fat containing a certain amount of free fatty acid, forms an emulsion with an alkaline fluid more readily than does a neutral fat, and as the pancreatic juice is inhibited in its action by strong alkalies.

I treated four cases of typhoid with acid sulphate of soda. These were cases that were admitted on or before the seventh day of the disease. In two cases the treatment was started on the seventh day, in one on the sixth day, and in one on the fifth day. These cases were selected on account of being the only ones that were seen thus early in the disease. On admission they showed no indication of being mild cases, and I have no reason to believe that their uninfluenced course would have been less severe than the majority of cases during the fall of 1901, which was noted for its severe epidemic. Their temperature charts showed from

the time they came under the influence of the soda a fall of about one degree, and the morning remission was almost entirely abolished, the chart showing almost straight lines.

The course run by these cases was short, the fever reaching normal in all of them in less than twenty days. They were exceedingly comfortable under the treatment, sleeping well and feeling well. In two of these cases we could not obtain the soda during an interval of three days, necessitating our stopping the treatment for that time. The day following the withdrawal of the soda the temperature went up a degree in one case, and a degree and a half in the other, remaining so until after the treatment was resumed, when it again came down to its former place.

There were six other cases treated with the soda, but in these the drug was given later in the disease. The impression made by it was less marked; yet we thought we saw some amelioration in the symptoms in all.

In one case the soda solution, 15 grains to 4 ounces, was given hypodermically, 15 to 20 minims of the solution being given at each injection. There was very little pain attending its use, and the effect produced corresponded to that experienced when given by the mouth. There were no abscesses resulting from its use.

In a solution of 15 grains to 4 ounces the taste is not unpleasant, and patients take it readily, some even liking it. It can be given in almost any quantity, but in large doses would probably act upon the bowels. In typhoid fever, however, this would be no objection to its use.

The laboratory reports have been confirmed by its use in my cases where it was thoroughly tried. I believe it opens up a new method of treatment, which is well worth a further and more extended trial.

The above observations would indicate the following:

1. That the acid sulphate of soda is germicidal to typhoid bacilli in a solution of 1 to 300.

2. That it does not have a toxic effect when used hypodermically on guinea-pigs in a solution of 1 per cent.

3. That it increases leucocytosis, and in this way helps nature to combat the disease.

4. That it neutralizes typhotoxin, and must in a measure lessen the delirium, fever, diarrhea, and mental stupor, and modify various other symptoms attributed to this poison.

5. That it prevents to a great degree the congestion of Peyer's patches, and the other lymph follicles of the intestines.

6. By so doing it prevents to some extent hemorrhage and perforation.

7. That it will resist the bacilli or toxin in any portion of the body.

8. That it will greatly lessen the complications of the disease.

9. That it is a prophylactic, as it can be taken by mouth in large quantities in an antiseptic strength, and as it will not be neutralized in the stomach, although the susceptible typhoid stomach is one of subacidity.

10. That this acid sulphate of soda will replace physiologically the deficient hydrochloric acid.

11. That it furnishes an abortive treatment, since if it lessens the intestinal involvement it would necessarily shorten the disease.

12. It may be used to purify contaminated drinking-water by allowing the solution to stand from twelve to fifteen minutes before being taken.

CHANGE OF CLIMATE IN THE TREATMENT OF PHTHISIS.

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It is true that phthisis is a subject in medicine about which so much is written and which is so thoroughly discussed by the profession, year in and year out, that one feels hardly justified in bringing up the subject again. And yet it is also true that, with all the thought the medical profession has given this subject, with the object of arriving at the very best results of treatments, we have to-day more people dying from this dreaded disease than from any other known ailment.

This in itself should be sufficient incentive for the earnest physician to continue his search after knowledge on this subject until he finds a remedy with which he can cure his patients. Be it with medicine, through strict attention to hygiene,

or a change of climate, I have no doubt that the remedy exists, possibly only by the proper combination of the three just named; but as yet, I am sorry to say, we have not found it efficient enough to effect a cure in *all* our cases.

It is true we have mastered the disease to such an extent that many lives are saved if the patient comes to us early, under favorable conditions, and is both able and willing to carefully carry out the physician's instructions.

It is my intention in this paper not to touch on the hygienic nor the medicinal treatment of phthisis, but confine myself to the title of the paper "Change of Climate," and more particularly to pointing out, or fixing upon, definite locations; the advantages they possess, how to get there, give the names of hotels, boarding-houses, or sanatoriums, the cost of living, the prospects of and how one can earn a living for patient and family if necessary. I think a patient has the right to expect all this information from the physician who sends him in his sick condition to a strange place several thousand miles away from home and friends. And yet how often are we physicians not fully prepared to do this for our patients.

In considering the climatic changes in the treatment of phthisis, it is necessary to make a very thorough study of our case in the first place, and then to exercise our very best judgment in deciding if the case under consideration would really be benefited by a change. No one would be likely to send away from home patients suffering from acute miliary tuberculosis, acute pneumonic phthisis in its early stages, a case of tubercular ulcerative diarrhea, nor a case of advanced diabetic phthisis.

From all such cases one could not expect to derive any benefit from the change, and as long as the disease would be certain to keep the patient miserable as long as he lived, wherever he might be, he could certainly find some comfort and occasionally a happy moment at home, among his friends, which he could not expect to have accorded him away from home among strangers. Take, however, on the other hand, the far greater class of phthisical cases which come under your care early in the disease before any complications have arisen. Act early and promptly, and what happy results you will get. Nearly everything, however, depends upon early action. Take a case of recurrent hemorrhages in the early stages of phthisis—cases which originate from pleurisy, pneumonia, influenza, catarrhal bronchitis, with local consolidation, nervous and bad sleepers, patients advanced in life, or the young, the weak from overwork, excessive dissipation and late hours; you will have an anemic, emaciated, thin-blooded, chilly, depressed, worn-out patient with great odds against him of ever getting better as long as he lives at home, and in the way he has been living when the trouble first developed in his lungs. Send such a case, say, from the eastern or middle Atlantic States to the tablelands of the Rocky Mountains, suited to his particular case, and the change in that patient's physical as well as mental condition in a very short time will be simply marvelous.

I myself have decided preference for New Mexico over Colorado as a health resort for our consumptives. New Mexico has many more days of sunshine in the year than Colorado, has less rainfall, has a more porous soil, is farther south, therefore a milder climate, so that our patients can remain outdoors all the year round (even at an elevation of from one to two thousand feet above that of Colorado) with perfect impunity, and therefore get the full benefit of outdoor life the whole year round; while in Colorado at the same elevation it would be too cold in winter for many of our patients. Let me mention an illustration. The average temperature in winter at Las Vegas Hot Springs, though situated in the northern part of New Mexico, 400 miles south of Denver, and at an elevation 1569 feet higher than that of the city of Denver, is fully 20 degrees warmer than that of the latter city, while in summer it averages from 10 to 15 degrees cooler than that of Denver. With our more delicate patients let us go even to central or southern New Mexico, and what will the hygienic and therapeutic value of that climate do for them? The sunshine alone—three hundred and thirty-nine days of it in a year!—will entice them to spend most of their life in the open air. And such air! Pure, cool,

crisp, aseptic, life-giving air! It has been proven by experiments that it is as free from harmful bacteria as that of mid-ocean—the purest known to science. If you are well and strong you will walk in it, ride in it, climb mountains in it, never feeling fatigued, but grow stronger in it. If you are frail or weak, you will want to do the same. If you are advised not to, you can sit and bask in the sunshine and get most of its benefits. Aside from its cheering influence upon the feelings, there is a marvelous power in the New Mexico sunshine which we can only record, not explain. Warm as the sun is sometimes in midsummer, it never withers, but merely mellows and ripens. It goes through bone and marrow, dissolving all malarial drift and clog, softening the memories of the past aches and pains, and reconciling the system to the new life it is to enter upon, under the influence of new and natural stimuli. But the real hygienic work is done by the dry, pure, rarefied atmosphere. The rare air compels deeper respiration to satisfy the demands of oxygenation in the lungs. What is needed is oxygen—the oxygen of pure, dry air. This alone is a specific in early phthisis. It will not cure every case—no specific does that; but it will cure nine in every ten, providing enough of the remedy is taken. Baumgarten says: "Tubercle cannot live without moisture; a moist air nourishes, a dry air tends to destroy it." The breathing of light, pure, dry air, not by fits and starts, but continuously, constitutes what is necessary to cure consumption.

Our directions not infrequently given to patients suffering from phthisis are these: "Go to the tablelands of Colorado or New Mexico, where are dryness, altitude, and excess of sunshine; select a home on ranch or in town, where you may obtain wholesome food; live out-of-doors all you can; seek medical advice only when required, but depend upon climate and exercise to restore you to health." This is wholesale advice prescribed in a wholesale way, with evident unfamiliarity with the general results accruing therefrom. The prescription should be more explicit and warnings more frequent. It should not be expected that invalids, whose constitutions are impaired by disease, who are surrounded with home comforts and luxuries, who have been more or less under close medical supervision, who are as a rule unfamiliar with the favorable or unfavorable conditions affecting the disease which compels their absence, and who since they are invalids are in no wise proper persons to direct their own case, can safely exchange home life for ranch life, to rough it as best they may. It is an error to presume that patients unfitted to conduct their own case at home without medical supervision can do so in New Mexico or Colorado. It is an error to presume that invalids who have made no special study of climatotherapy shall know how intelligently to obtain favorable results, because removed to a location possessing improved climatic conditions. It is an error to presume that any of nature's remedies are exempt from the general recognized law that intelligence and experience shall direct their use.

Whereas it is true that in the tablelands of New Mexico are found excess of sunshine, increased dryness, higher altitude, a minimum of precipitation, and less variation of temperature than in other sections of the continent, yet it is not all sunshine. There are cloudy days and there are stormy days. There are days that have considerable wind. There are times when it is dangerous to expose one's self. There is an intelligent way to take advantage of the conditions prevalent there, and there is an erroneous way. It is necessary, therefore, in the first place to study our patient's case thoroughly; secondly, to be thoroughly acquainted with the location we select, so as to be sure we send him to the place suited to his particular case; thirdly, provide him with sufficient instructions that he will know just what to do and how to take care of himself after he gets there. New Mexico itself is a great empire, three hundred and thirty-five by three hundred and sixty-seven miles, and has quite a variety of climates, though all possessing the common feature of dryness combined with considerable elevation, ranging from 4000 to 8000 feet, the average being 5600 feet above the level of the sea. This means a temperature

equivalent to that of the New England coast, other things being equal, because every 800 feet of elevation is climatically equivalent to a degree of northerly latitude at sea level. But other things are not equal. New Mexico is a country of sparse rainfall, and there is only a very slight humidity in the atmosphere (sunstroke and fogs are unknown there). The result is an unusually equable climate, little affected by summer heat or winter cold. One is not uncomfortable and is entirely safe there in the shade with a temperature of 110°, while in New York or Philadelphia on a humid day you are not only uncomfortable, but your life is in danger from sunstroke at a temperature often of 90° in the shade.

Let us now consider in detail the merits of a few suitable places in New Mexico, as well as the way to get there and the expense of living. The railroad journey should be made over the most direct and most comfortable road that can be selected. The territory of New Mexico has very few railroads. The Atchison, Topeka & Santa Fe is the desirable road one can take out of Chicago, where you can get a through Pullman sleeper, or their improved tourist sleepers, which are equally as comfortable as the standard Pullman, but much less expensive. On them you can carry your own food and cook it, or the colored porter will cook and make your coffee for you on stoves and with the fuel provided free by the company for that purpose. The service on this road through to Los Angeles and San Francisco is strictly first-class in all its appointments.

The first place to be considered, 1134 miles out of Chicago on the Santa Fe railroad, in the extreme north of New Mexico, is Raton, a town of about 4000 inhabitants. It is situated on the southeastern slope of the Raton spur of the Rocky Mountains. The city is amply protected on the north and west, while the country to the south and east is open, which makes it a pleasant winter resort, though the altitude of the town is 6622 feet above the sea level. Raton is lighted with electricity and supplied with pure water from the mountains. Good roads and drives lead from the city to picturesque canyons in the adjoining mountains, and to the beautiful prairie country on the south. The canyons are well watered by living streams and are thickly wooded. Small farms nestling in the hills add to the beauty of the surroundings, and the comfort of the health-seekers. The air and water are pure, and the atmosphere is dry. With this combination Raton must be an ideal spot for the consumptives who have good hearts, blood-vessels, and kidneys, and whose lung troubles are not too far advanced. Board can be had very reasonable at near-by stock ranches or private families in the town. At the Palace Hotel, a new stone structure just completed, newly furnished and well kept, board and room can be had for $25 to $30 per month; while at the Depot Hotel, everything strictly first-class, the rates are $3 a day; with a liberal reduction by the month. All the hotels under the "Harvey" management in New Mexico are high-priced, and the guests get the best of everything in return.

Forty miles beyond Raton, on the same railroad, is the town of Springer, with about 600 inhabitants, nearly all Americans. It has graded schools, churches, stores, and two physicians. Its elevation is 5768 feet. The mean annual temperature is 51°; the atmosphere is exceedingly dry, light, and invigorating. Not far from the town are lakes and reservoirs well stocked with bass, perch, carp, etc. During the spring and fall these lakes are covered with wild ducks, geese, and other fowl common to this latitude. In the mountains a few miles distant are plenty of deer, bear, turkeys, and grouse, and the streams are full of mountain trout. Board is quite reasonable. At the Springer Hotel the rates are $6.50 per week; at the Montezuma $5 per week, and $18 per month.

Seventy-one miles farther along this road, and at an altitude of 6384 feet, we come to a thrifty, up-to-date city of 8000 inhabitants, Las Vegas. Here the sun shines nearly every day in the year. The average noon temperature in winter is 40°, spring 55°, summer 80°, and autumn 60°. The Castaneda is a first-class house. At the Central Hotel you can get room and board for $6 a week. There are five good restaurants in the town,

which serve meals at 25 cents. Rooms can be rented for $8 per month. The St. Anthony Sanatorium, run by the Sisters of Charity, is a beautiful structure containing every modern convenience and comfort for the sick at very moderate terms—from $5 to $15 a week, according to attention required. The city has well graded schools, high school and normal school with competent instructors, churches of most every denomination, good stores, and banks. The social life here is all that could be desired.

Six miles from here, on a branch of the Santa Fe, and at an elevation of 6767 feet, is Las Vegas Hot Springs, practically a village devoted to recreation and the restoration of health. It is situated at the very edge of the Rockies. A beautiful canyon opens at the western extremity of the grounds. The foot-hills of the Rockies form an almost complete enclosure to the city, thus affording a protection against severe wind and sandstorms, and materially modifying the temperature both in winter as well as in summer. The palatial Montezuma Hotel with its modern and perfect appointments is conceded to be one of the finest, if not the finest, resort houses in this country. Thirty hot mineral springs rise within the hotel grounds, the water of which varies in temperature from 70° to 104° Fahrenheit. Their mineral elements are quite as varied, many containing an abundance of lithia, free carbonic gas, and sulphuretted hydrogen gas. The gymnasium, bath-houses, and natatorium, the water-supply of which is taken direct from the hot mineral springs, are models of modern equipments. While each locality in New Mexico has, in general, these advantages of a high and dry climate, aseptic, rare air, the location of the Las Vegas Hot Springs and the Montezuma Hotel adds to them certain others, which fit it to be a rest and health resort without a superior in the world. Rates for one in a room, $2.50 to $4 per day, or $14 to $21 per week; medical attendance and baths extra.

Eighty miles farther south, or 1328 miles out of Chicago, we come to the city of Santa Fe, the capital of New Mexico, situated in the mountains 6939 feet above the sea, with a population of nearly 8000, about half of whom are Americans; many of the rest have the mixed American and Latin blood. It is a remarkable fact that the average number of cloudy days in each month never exceeds six, and often falls as low as two, to the month. We have then here an abundance of sunshine, dry air, at an altitude of nearly 7000 feet, good water from the mountains, and a city where the schools and social life are all that can be desired. With all this in their favor, patients suffering from lung troubles could not help feeling at home here, nor fail getting well from their much dreaded disease. St. Vincent Sanatorium here, under the direction of the Sisters of Charity, is designed for invalids; the rooms are large, well ventilated and heated by steam. Special attention is given to the table; meals are served in private rooms, and special lunches provided for delicate persons, without extra charges. Terms $10 to $15, including meals and attendance. The Claire Hotel, centrally located, is a large, new, and well kept house; rates $12 a week or $35 a month.

The few places so far described are all located in the northern part of New Mexica and at quite high altitudes, which would only be suitable places to send those patients who are not far advanced in the disease and who have no kidney nor heart complications.

Cases advanced in the disease, with cavities in the lungs, patients advanced in life with heart or kidney complications, or subject to hemorrhages, anemic and chilly patients, will find much greater benefits by going to central or lower New Mexico, at least for a while, at first, where the winters are warm and the air dry, but the altitude not so high.

The pleasant breezes from the adjacent high mountains temper the summer heat, and the nights are always cool. Albuquerque, about 60 miles south of Santa Fe (1377 miles from Chicago), at an elevation of 4935 feet, lies on the sunny slope of a broad plain, but is amply protected by high mountain ranges at a distance. The population is about 12,000, mostly Americans. It is quite a business center, and has all the improvements of the eastern cities—public sewer system, trolley cars, water, gas, and electric light

plants. Patients who would be obliged to remain West on account of their health could look forward in a city of this class with good prospects of securing positions and making a living for themselves.

Deming is located in the extreme southwestern part of New Mexico, 230 miles south of Albuquerque, or 1600 (by rail) southwest of Chicago. Its altitude is 4315 feet; the immediate vicinity is level, surrounded by distant mountains.

Deming is the center of the sunshine region of the southwest. The percentage of sunshine for fall and winter months is 73.8, as compared with 61.7 per cent at Denver, Colorado, and San Diego, California. The cost of living is not exorbitant here. An economical family, say of four or five people, can get along nicely on from $15 to $20 per month for provisions. Rent is from $10 to $25 per month; the latter amount would secure a very nice house all ready furnished.

Fifty miles west of Deming, on an elevated plateau nearly 6000 feet above the sea level, is the progressive town of Silver City. Ridges several hundred feet high immediately surround the place, while a few miles back are mountains several thousand feet higher. In this sheltered position it is not deprived of sunshine—in fact, the large proportion of sunshiny days here leads one writer to declare that it is "a silver city with a golden climate." The proportion of sunshiny to cloudy days is as twenty-eight to one. The city being so far south, sheltered from the winds, and with almost continuous sunshine, it is possible here to live outdoors all day long at all seasons of the year. There are no sudden changes of temperature, and the absence of excessive humidity takes away the danger of catching cold. Add to all this the pure, rare air of this high altitude, and you have all the essentials to quickly build up the wasted tissues of the sick. The city has ten inches of rainfall a year, nearly all of which takes place in July, August, and September.

A new hospital for tuberculous patients has just been completed in Silver City. It is under the management of the Sisters of Mercy. Five miles out of town is the United States government sanitarium for the treatment of soldiers suffering from diseases of the respiratory organs. After the United States government had made a careful search and a deliberate study of location, climate, surroundings, and everything which goes to make up the very best, for the cure of patients suffering from consumption of the lungs, it selected Fort Bayard, what is now practically one of the suburbs of Silver City, situated 800 miles due south of Denver, Col., and in the extreme southwestern part of New Mexico. This fact in itself is a strong argument confirmatory of New Mexico being the choice health resort in the United States for the cure of consumptives.

We do meet with phthisical patients who cannot feel at home in a place where they cannot occasionally go to and see the ocean. In the coast range mountains of Southern California such patients can find not only pleasant but very beneficial places, suited to their diseases. One such place is Idyllwild Sanitarium, in Strawberry Valley of the San Jacinto Mountains, about sixty miles from the coast, between Los Angeles and San Diego, in Riverside county. It is reached by the Santa Fe Railroad to San Jacinto, and from there by automobile or horse stage twenty miles, five of which are through orange groves and beautiful farms, and the rest up through the mountain to an elevation exactly that of Denver, Colorado—5280 feet above sea level (the summit of the mountain is 11,000 feet high). In this beautiful valley is situated the new and perfectly equipped sanitarium. The Sanitarium Company purchased 1500 acres of land surrounding it, which stretches to the mountains on either side of the valley and joins the large government forest reservation of tall growths of pine, spruce, cedar, and live oak.

There are cottages of six and three rooms as well as tents for rent for those who prefer housekeeping; the water, heat, light, and sewerage connections all being furnished from Main Sanitarium. Hopeless cases of consumption will not be received, but the profession is invited to send such cases as under the best possible conditions have a fair prospect of recovering.

Being only a few miles farther away from the ocean than we are from Atlantic

City or Avalon, patients can get up pleasant excursions to Los Angeles, a beautiful city of over 100,000 inhabitants, to charming Pasadena, or sunny San Diego and Colorado Beach, the paradise of America, and return again to their mountain home without much fatigue nor a great expenditure of money.

The advantages of Idyllwild Sanitarium are the following:

The isolation from the dust, noise, and temptation of towns and cities; its altitude, one mile above sea level; the atmosphere of the pine forests; the purity of the atmosphere, due to three causes—first, altitude; secondly, proximity to the great Colorado Desert, from whence comes the nocturnal breeze; thirdly, proximity to the Pacific Ocean, from whence the diurnal breeze comes; beauty of scenery and variety of interesting short tours that can be made through surrounding mountains.

The cottage system, the tent system, the large territory controlled by the sanitarium management, that insures thorough enforcement of sanitary rules in all of the contiguous country.

The mildness and equability of the climate, unsurpassed by any other mountain resort in the world; pure spring water throughout the buildings; surrounded by 737,000 acres of government forest reservation, in which are found all kinds of game, and which adds to the great range of healthful outdoor amusements, available at least 340 days in a year.

Should a patient be obliged to go from here to New Mexico for his health by himself, I think a sanitarium is a very good place to stay, at least for a while, as he will be able to pick up acquaintances among the inmates of the institution, which will help to prevent homesickness. He will get the best of care and wholesome food there for about the same it would cost him at a cheap hotel or private boarding-house. After he gets acquainted with the country and gains strength, he can select for himself such locations as he may find most pleasant, beneficial, and economical. For those who will be obliged to earn their own living while there, light farming, gardening, raising chickens and bees, and fruit-growing are not laborious, but pleasant and profitable occupations. A good three- or four-roomed adobe brick house can be built there, finished with second-class lumber, for from $150 to $175.

Adobe bricks are large, sunburnt bricks, made from the soil of the country mixed with straw. The houses can be plastered and papered inside and plastered on the outside. They make very cool houses in summer and warm in winter. Buildings of this material erected two hundred years ago are still habitable. By thus locating in one of these self-constructed economical houses in a fertile canyon or valley near a town or city, like in the Canadian Canyon in the north near Springer, or in the Rio Grand Valley near Albuquerque, it would not be difficult to dispose of your products at a good market price, as butter there never sells for less than 25 cents a pound, nor eggs for less than 25 cents a dozen; poultry from 10 to 15 cents a pound.

In these valleys much alfalfa is cultivated, which affords a rich pasture for the honey-making bees. The honey industry here is not only a light but a very profitable occupation, one even quite suitable for a woman to engage in.

Hogs also do well on alfalfa, and a ready market can be found for the home-cured meats. The grapes grown here are as large and luscious as those grown in California or southern France. Wine of a superior quality is manufactured here. In many parts of New Mexico are now grown the very best varieties of apples, pears, peaches, cherries, plums, nectarines, apricots, quinces, almonds, pecans, and walnuts. It is said that even partial crop failures are very infrequent.

Mr. Melvin W. Mills, of Springer, in the Canadian River Valley, who has over two hundred acres of land under cultivation with these various kinds of fruit, has accumulated an independent fortune out of its revenue in a comparatively few years.

The railroad fares from Philadelphia, including a berth for one night in Pullman sleeper between here and Chicago and Pullman tourist sleepers from Chicago to New Mexico, are $55 to Raton, $59 to Las Vegas Hot Springs, $62 to Albuquerque, and $65 to Silver City—1655 miles from Chicago. To California the fare is $81.

Round-trip tickets, known as home-

seekers' tickets, are on sale all the year round for one fare plus two dollars, but are good only for twenty-one days from Chicago and return. To Las Vegas Hot Springs round-trip tickets are sold at Chicago for $50, good for ninety days.

I trust this detailed account of a few resorts suitable for our consumptives will serve as a useful and ready reference for my fellow physicians. If it will, my object in writing the paper will have been accomplished.

1630 N. 16TH STREET.

THE SILVER ANTISEPTICS.

BY V. COBLENTZ, PH.D.,
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One of the chief aims of modern pharmaceutical chemistry has been to replace many of the customary remedies by others of equal or even superior therapeutic efficiency, but devoid of their objectionable features.

The nitrate of silver is a drug of recognized value, whose many shortcomings have always militated against its use in conditions in which it was otherwise indicated. Although one of the standard remedies for the treatment of inflammations of the mucous membranes, its irritating and often caustic action has greatly restricted its field of application. Aside from this, it has only limited penetrating power, owing to the fact that it is precipitated by albumin and sodium chloride, two of the ordinary constituents of the secretions and tissues. This is a very serious disadvantage, since many of the conditions in which it is employed are due to microörganisms, which are found not only in the superficial but also in the deeper portions of the mucous membranes, and hence cannot be reached by solutions of this chemical owing to the formation of an insoluble albuminate of silver in the upper layers.

For instance, it is well known that in gonorrhea the gonococcus soon invades the deeper layers of the mucous membrane, and unless the germicide selected has a sufficient penetrating power it will not destroy the organisms beneath the surface, and therefore will not effect a complete cure.

The recognition of these drawbacks is responsible for the host of substitutes for silver nitrate that have been introduced in recent years, and which are especially intended for the treatment of gonorrheal affections. Most of these represent combinations of metallic silver in various strengths with various proteid bodies. They are all said to be less irritating than the nitrate, and to be unaffected by albumin or sodium chloride. Their main uses comprise gonorrheal diseases of the genito-urinary tract and affections of the eyes, and as each one has its advocates who extol its high penetrating and germicidal power and freedom from irritation, it is very difficult to decide in how far such claims are justified. Statements as to the penetrating power of a drug based upon experiments made outside of the body must necessarily be unreliable, and the same applies to bacteriological studies, since it is not possible to reproduce the conditions as they exist in the tissues.

Special importance has been attributed to the amount of silver contained in these new preparations as giving a clew to their efficiency, but such reasoning is also fallacious. Owing to the special combination in which the silver exists, a small percentage of this metal might act much more effectively than a larger proportion, which is in a less active combination.

It will be of interest, however, to briefly refer to the preparations hitherto introduced for the purpose of describing their pharmacological characteristics.

Argentamine.—Argentamine (ethylene diamine silver nitrate) is a clear fluid containing 10 parts of nitrate of silver in 10 parts of ethylene diamine. The presence of ethylene diamine gives it greater penetrating power than nitrate of silver. It does not coagulate albumin, but is precipitated by chlorides. It is strongly alkaline, and therefore irritating, but less so than the nitrate, and for this reason is best adapted for the chronic cases. The drug should be kept in dark-colored bottles and protected from light, as it decomposes easily. It has been recommended as a general substitute for silver nitrate in gonorrheal urethritis in solutions of 1 to 3000-1000, and in affections of the eye up to five per cent. It has also been used internally.

Tachiol.—Tachiol, or silver fluoride, has been recently lauded as an extraordinarily powerful germicide, which is said to destroy pathogenic organisms in solutions of 1 to 200,000. It is stated to be only slightly poisonous. The clinical data, however, are too meager to judge in how far these startling claims are justified by actual experience.

Silberol.—Silberol (silver sulphocarbonate) is said to be a powerful antiseptic and less caustic than nitrate of silver. It has been used in the treatment of gonorrhea and in ophthalmic practice, but the literature is too scanty to permit of an opinion.

Ichthargan.—Ichthargan is a combination of nitrate of silver and ichthyol sulphonic acid, having a slight odor resembling that of chocolate. It contains about 30 per cent of silver, and is readily soluble in water. Solutions must be kept in dark-colored bottles. Aside from its antiseptic action it is said to have astringent properties. It has been chiefly used in gonorrhea in solutions of 1 to 3000-2000 on the average, sometimes 1 to 500.

Citrate and Lactate of Silver (Itrol and Actol).—Both of these form white, odorless powders, the citrate (itrol) being soluble in about 1 to 3800 parts of water, while the lactate (actol) is much more soluble, 1 to 15 parts of water. These preparations were originated by Professor Credé, who tested them particularly in surgical practice. Owing to its comparative solubility the citrate (itrol) is much less irritating than the lactate (actol). Solutions of the citrate and lactate of silver, 1 to 2000-5000, are employed for the disinfection of the skin, for irrigating wounds, and for the treatment of ulcers, abscesses, fistulæ, etc. The citrate (itrol) may also be thinly dusted over wounds or ulcers as an antiseptic dressing. Care must be used in their application, as they discolor the linen. They have also been used for the preparation of catgut and other dressing material.

Argonin.—Argonin is a compound of silver, casein, and alkali, prepared by adding a solution of sodium casein to a solution of nitrate of silver, and precipitating the newly formed body by the addition of alcohol. It contains 4 per cent of silver, although recently a preparation known as argonin-L has been brought out, containing 10 per cent. Argonin appears as a white powder, insoluble in cold water, but readily in hot water, and precipitated by acids. Solutions must be freshly prepared and excluded from heat and light. Argonin-L is much more soluble in cold water, and the solutions can be preserved for a longer time. It is ordinarily employed in the strength of 2 to 10 per cent, especially in cases of gonorrhea and affections of the eyes, and in these solutions is usually unirritating.

Albargin.—Albargin is a combination of gelatose, a derivative of gelatin, with silver nitrate. It is a bulky brown powder, freely soluble in water, the solution having a neutral reaction. By means of absolute alcohol in an extraction apparatus 20 per cent of the silver contained in albargin can be extracted in the form of free silver nitrate. It shares with silver nitrate free diffusion through animal membranes. It is said not to be precipitated by albumin, but this is only true to a certain extent; a 0.5-per-cent solution causes a precipitate, and a 0.1-per-cent solution a voluminous precipitate. In the percentages in which it is recommended, 0.1 to 0.2, in the treatment of gonorrhea, this is not objectionable. Solutions must not be exposed to light, and should be kept in amber-colored bottles.

Largin.—Largin is a combination of a para-nucleo-proteid with silver, containing in an air-dried condition 11.1 per cent of the latter. It appears as a gray powder which dissolves in 9 parts of water, and is not precipitated by albumin or sodium chloride. Attention is called in the literature to its relative freedom from irritation and high penetrating power. Largin has been employed to some extent in the treatment of gonorrhea in solutions varying from ¼ to 5 per cent, according to the acuteness of the disease. Another use has been in affections of the eye, and here the best results have been in cases of non-gonorrheal character. As the solutions are easily affected by light they must be kept in dark-colored bottles; upon standing a precipitate is formed, which will redissolve, however, when the solution is agitated.

Nargol.—Nargol is a combination of nucleinic acid and silver, containing 10 per cent of the latter. It is a brownish-white powder, readily dissolving in warm

water with faintly alkaline reaction. It is not coagulated, and is not precipitated by sodium chloride or alkalies. It is comparatively unirritating, and has been used in the treatment of gonorrhea in solutions from ½ to 5 per cent by injection, and up to 10 per cent by instillation. In eye diseases it is recommended in solutions up to 10 per cent. It must be protected from light.

Argentol.—Argentol (silver oxychinolin sulphonate) is a yellowish powder containing about 32 per cent of silver, difficultly soluble in cold water, but more so in hot water. It has been employed to a limited extent as a dressing for wounds, skin diseases, venereal ulcers, etc., and also in gonorrhea in 1-to-1000 solutions.

Collargol.—Collargol (argentum soluble Credé, or argentum colloidale) is an allotropic form of silver which dissolves in water and albuminous fluids. It may be introduced into the system by means of ointments (unguentum Credé), hypodermically, by intravenous injections, and by internal administration, the intravenous method being the most rapid in effect. Its germicidal action is due to the fact that it forms combinations which inhibit the growth of bacteria and neutralize their toxins. Owing to its rapid excretion it does not produce any poisonous effects or argyrosis. It has been extensively employed in septic infections of various character, such as septicemia, puerperal fever, complications of diphtheria, scarlatina, typhoid fever, certain diseases of the skin, venereal diseases, etc. The dose of the ointment is 30 to 45 grains. For subcutaneous injections a solution of collargol, 1 to 200 of distilled water, should be used in amounts of one-half to two syringefuls, while externally it may be administered in doses of one-third grain in pill or solution.

Protargol.—This is a silver proteid preparation, containing about 8 per cent of silver in a fixed combination, which is not precipitated by albumin or chloride of sodium or alkalies. It occurs as a yellowish powder, which is soluble in water up to 50 per cent. It has a high penetrating power, and in the solutions ordinarily employed is free from irritation. The prestige obtained by protargol is due in no small measure to the fact that it was introduced by Professor Neisser, the discoverer of the gonococcus, and his strong recommendations of its value in gonorrhea have incited more thorough investigation than in the case of any other silver preparation. The strengths of the solutions used in gonorrhea vary from ¼ to 1 per cent, and in eye affections from ½ to 5 per cent. For internal diseases, such as septic conditions, affections of the gastro-intestinal tract, locomotor ataxia, etc., it has been administered per os in doses of 1 to 3 grains.

Argyrol.—Argyrol, or silver vitellin, is a dark-brown powder containing 30 per cent of silver. It is readily soluble in hot water, and is not precipitated by albumin or sodium chloride, in this respect resembling the other organic combinations. The literature so far published is too meager to permit of any definite opinion in regard to this drug. While it is claimed that on account of its large percentage of silver and high penetrating power it is more actively germicidal than those preparations already in use, it does not appear that the duration of the disease has been shortened, which, of course, is the only criterion in this respect. While its lack of irritating action has been emphasized, several reports of cases in which it produced irritation have already been published, and it is probable that when it has been tested more extensively it will be found not to differ essentially from the other organic silver compounds. One strong objection is its disagreeable staining effect, which must to a great extent prevent its use in the more fastidious patients. In the treatment of gonorrheal urethritis complications have occurred, and owing to the fact that the drug frequently dries up the secretions it gives a false sense of security to the patient, thereby leading to a recurrence of the discharge and the subsequent extension of the disease to the posterior portion of the urethral canal. In the solutions employed, which are much stronger than the other silver compounds, the high cost of the preparation is another disadvantage.

The following general conclusions are permissible from the above data:

1. That the organic silver preparations represent a real addition to modern materia medica.

2. That all of them are less irritating

than the nitrate of silver, and therefore much better tolerated by the patient.

3. The fact that they are not precipitated by albumin and chlorides enables them to penetrate more deeply into the tissues, and therefore promotes their germicidal activity.

4. That the percentage of silver is of much less importance than the special combination in which the silver exists.

EFFECTS OF GASES AND POWDER SMOKE UPON COAL MINERS' EYES, AND THE TREATMENT TO BE USED.

By G. R. Gilbert, M.D.,
Surgeon Union Pacific Coal Co., Cumberland, Wyoming.

Among the coal miners employed by the Union Pacific Coal Company in one of the mines here, I have noticed a great many of the men to be bothered by the smoke and gases while working in the mine. They seem to be slightly poisoned in a way, the particular effects being an intense hyperemia of the eyes. Sometimes they are affected in other ways.

I will describe briefly the conditions under which the coal miners operate. This applies in a general way to most coal mines. The miners work chiefly in rooms and entries down in the mine at depths varying from a few hundred to two thousand feet, as measured down the main slope, which here is on a pitch of about twenty-three degrees. The main slope and its branches on either side, known as the entries, are used for transporting coal and rock out of the mine, and for taking timber and supplies, etc., down into it. The entries are long galleries or tunnels at various levels and about at right angles with the main slope. Each entry turns back, so that really there are two entries parallel at each level. One is called the back entry, and is for the purpose of forcing air completely along one entry and back again along the back entry, and then on down the slope to the next entry, etc. The ventilation in this mine is almost perfect, being the best devised, and as authorized and required by State law, the air being forced down by a fan or wheel which runs day and night and keeps the current of fresh air constant. From the entries the rooms are blasted out. These rooms are where the men get the coal out. There are two men as a rule to each room. The room is about 30 feet wide by 12 feet high (the coal vein being on an average 12 feet thick here). As more coal is taken out the room gradually lengthens until it nearly reaches the entry above, by which time nearly all the coal is removed. Only half the coal is removed at first, the other half being left for supports, etc. The miners therefore work up-hill, and a steep one at that, and in the dark except for their miners' lamps upon their caps; the miners' lamps being more or less like small coffee-pots with a cotton wick in the spout and burning lard oil.

The walls and roof and floor of rooms and entries, etc., are almost solid coal. The coal here at Cumberland is a hard, exceptionally good quality of bituminous coal, and by many considered even better than the Rock Springs coal. There is scarcely any slack in this coal. In soft coal mines in the east pickaxes are used; but here nearly all has to be blasted out. In this process the men insert a one-, two-, or three-inch drill, and turning the wheel by hand, drill a hole one to three inches in diameter and up to six feet deep, and then they are ready to insert the cartridge. To make this cartridge they use a waterproof paper and roll up the powder in this until they have made a cylinder fitting the hole they have drilled, and varying as to length according to how large a shot or blast they want. The cartridge is usually 18 to 25 inches long and contains three or four pounds of powder. They insert this cartridge in the hole and tamp it with dirt and débris, and put a hollow iron pipe of very small diameter back to the powder. Then they make a squib, or practically speaking, a cigarette of powder, only a little longer, and using this for a fuse put it into the end of the pipe and ignite it, and seek a place of safety. The amount of coal brought down with one shot varies with the quality of coal and amount of powder and other conditions; but the average is from two to ten tons of coal at one shot. Such a blast as that, and that of one or two hundred others in rooms and entries near-by, fills the working place with gunpowder smoke, gas, and coal dust, and as each miner fires several shots a day, even with the best

ventilating processes the air is bound to be more or less irritating. But all the miners are not so badly affected in regard to their eyes as to require treatment. I have found out that those miners who work in a certain part of the mine are the ones most often requiring treatment.

In one part of the coal vein there is a streak of coal running transversely to the vein for hundreds of feet, so that this same streak is met with at each level and each entry, on the north side mostly, of the slope. Four entries are being worked now on the north side of the mine. The main slope being east and west, dips downward to the west. This streak of coal, whenever a new room is opened up, and when this part of the coal is exposed to the air, "works" constantly. There seems to be an extra or unusual accumulation of gases in it, and as the gas gradually escapes day after day it creates noises and slight movements, etc., and is noticeable. As the mine is very carefully and constantly inspected every day by the fire bosses and others, there is not enough gas to be at all dangerous. It is there in very small quantities. When the miners have been blasting this coal and opening up new rooms in it, they often have an attack of very severe conjunctivitis and need treatment. So that most of the cases of conjunctivitis have come from men working in this part of the mine. When not blasting they are scarcely ever troubled by gases, even in this part of the mine.

As each mine has its own characteristics, so does the coal in it, and certain kinds of powder have to be used in certain mines. Here the powder used is Dupont's FFF blasting powder. Before I knew of the cases nearly all arising from certain parts of the mine, I concluded it must be caused by the powder smoke alone, although it seemed as though a common cause might be the rubbing of a begrimed hand or sleeve against an eyebrow wet with perspiration; but I have never found any foreign particles in the eyes. I am now convinced that it is due to a mixture of powder smoke and the gas or gases oozing out of the coal or forced out of it by the disintegration of the coal mass when blasted. There seems to be no way of preventing the cause unless by a more rapid flow of air, more so than is practicable, and the trouble is only a slight one, not endangering life. It causes, however, an interesting condition nevertheless. A similar condition is no doubt met with in other occupations where explosives are used, with or without the presence of other gases. A similar state of affairs would be met with in turrets on men-of-war and in forts during heavy artillery fire, but the gases would be absent, and the firing would be for only a short time, and not every day as in a mine. We are all familiar with the symptoms and effects which fresh paint and turpentine and the peeling of onions produce upon the eyes. All these effects are transitory, lasting only until the cause is removed. But in the case of the miners their trouble lasts longer and is more serious. It varies also with the amount of blasting done, and is more apt to occur when unusually heavy blasts are fired.

The gases most often present in a coal mine are marsh gas (CH_4), and marsh gas mixed with air, when it is known as fire-damp; carbon monoxide (CO), or carbonic oxide gas, known as white damp; and the third of the important gases is the carbon dioxide (CO_2), known as black damp. There is also found a mixture of half a dozen gases called after-damp, and its composition is very variable. There is also hydrogen sulphide (H_2S), this being known to miners as stink damp, which is well named. There is also ethene or olefiant gas (C_2H_4), but it is rare. A gas strong enough to irritate the eyes *per se* would be in sufficient quantity to endanger life, and would be surely detected by the fire-bosses, and no one would be allowed to work there at the time. Of the gases most likely to be formed at the time of the firing of a blast CO or CO_2 is the one most surely to be formed; but on account of the oxygen given off in the explosion of blasting powder, if CO were formed it would be apt to be quickly oxidized and form the CO_2. Now the composition of blasting powder is a mixture of potassium nitrate, sulphur, and carbon. Some cheaper grades of blasting powder have sodium nitrate instead of the potassium salt. It is the same composition as gunpowder, except that the ingredients are in different proportions and the blasting powder is in larger-sized grains. The explosion is therefore slower and more

generally distributed, so the coal is not shattered to pieces, but comes down in large chunks. Now marsh gas, or carbon monoxide, or carbon dioxide, can be occluded in coal and allowed to escape only at the time of an explosion, and thus oxides would be formed of carbon and sulphur, the marsh gas giving up its hydrogen and taking up oxygen in its place; but the exact gases formed by explosions are not always definitely known, so that the exact combination of gases, coal dust, and powder smoke which would cause the condition in this part of the mine more than in another part cannot be more than approximately determined.

But it is quite certain there must be some combination of marsh gas, carbon monoxide, and carbon dioxide with dust and powder smoke. It is a condition which exists and has to be met with by the miners, and does not seem to be one which can be avoided by any practicable means. Some men working here have never been so troubled when working in other mines. Some mines are so dry and dusty that they have to have a regular miniature street sprinkler to settle the dust along the entries; but in this mine it is not so dry. Of course, in this mine as well as most mines there is a trickling of water down through the seams and crevices. Probably the same conditions have been met with and noticed by other mine surgeons; but I have never happened to see any mention of such cases, and thought a report of the same might be of some interest to the profession at large.

I will describe briefly some of the symptoms noticed by the miners. It is not infrequent for them to have no other symptoms than a temporary nausea or vomiting; sometimes merely an irritation of the lungs causing violent coughing, this being known often as a "stomach cough." Once in a while a man may be overcome and has to be carried out of the mine and sent home for a day or so. Such a case will complain chiefly of a violent headache, and his condition otherwise would be quite good and not requiring much treatment except for the headache and the bowels. But the conditions described severe enough to demand any treatment are rare, and it is the effects upon their eyes only that bothers them to any extent, and which is such a common affliction among them. It is an acute painful congestion or hyperemia of the eye structures, chiefly the conjunctiva, and usually of both eyes. The eyelids are deeply congested, and the corneas do not appear any way abnormal, nor does the iris, although there is great photophobia. No foreign bodies or sign of traumatism are observed. The lacrimal glands are often in greatly increased state of activity. The condition is often so painful that they lose no time in consulting a doctor. Sometimes they come right out of the mine to be treated, and sometimes they can remain at work until the end of their shift and then come for treatment. In 100 eye cases and eye injuries treated by me last year, seventy were cases of this description. In twelve the right eye was most affected, and in six the left one was the only one requiring treatment. In fifty-two both eyes were about equally involved. The duration of the trouble is one to three days. In some cases I never see them but once, which is usual. Frequently they come two or three times a day for from one to three days. Less frequently some cases come for a day or so and go back to work, and return in a few days with their former case aggravated, or perhaps a new case developed. In a few cases I have had to treat the same man for two or three attacks in a month. It seems that after they are through working in that particular part of the mine they are not so liable to be troubled again. But some cases have been so persistent in having recurrences that I have advised them to change to some other part of the mine, where they can get the coal out without so much blasting and where it is less smoky.

For treatment I have used a solution of zinc chloride in water, two grains to the ounce. In some cases I have used a four-per-cent solution of cocaine muriate, usually alone; but sometimes I have used, besides this, adrenalin chloride solution 1:1000. The zinc chloride solution would be really more indicated in an infected conjunctivitis, or when adrenalin was not to be had. But zinc chloride has its value. The cocaine should be used more where the pain is very intense. But I believe the remedy *par excellence* is the adrenalin chloride solution 1:1000 as prepared by Parke, Davis & Co. A very small quantity of chloretone is added to this by them,

for its slight anodyne effect. Adrenalin chloride is the rational drug for almost any hypermia, and in this condition more so than any other that I know on account of its hemostatic and vasomotor constricting properties. In this trouble we have an intense congestion without any infection. No antiseptics are indicated, and as the pain is not always so severe as to require cocaine, that is not often needed. I therefore use the adrenalin chloride solution almost entirely in the treatment of this affection, and with the most gratifying results. The adrenalin smarts a little at first; but in a half-minute to three minutes the intensely congested eyeball and lids are cleared white as normal, and sometimes the eyes are bleached whiter than even their natural condition. Therefore, by the relieving of the congestion the pain is alleviated, and the patient is benefited and recovery occurs. I very seldom need to give the patients any solution to use themselves; but as they cannot work till they are well, they can come to me two or three times a day for one or two days until recovered. Usually they recover after one treatment.

I have deemed it to be beyond the scope of this paper to even mention the fatal asphyxiations which are sometimes met with in mine accidents.

A CASE OF PRIAPISM OF SPINAL ORIGIN.

By H. D. Stichter, M.D.,
Philadelphia.

On May 27, 1901, I was called to see Mr. B., a pressman, married, aged forty-eight, and found him in great pain, suffering from priapism. Mr. B. is the father of nine children, five living and four dead, of strictly moral habits, accustomed to take an occasional drink of beer, uses tobacco moderately, never dissipated, no history of venereal diseases.

For the past year he complained of being very nervous, suffering with insomnia, a sensation of fulness around the waist, as though he should undo the top button of his trousers, when really the garment was loose fitting. In walking along the street he frequently found that his foot would touch the ground before he thought it ought to.

The present trouble began on the morning of the 26th. He came home at 5 A.M., feeling as well as usual, and on going to bed had an erection, and had intercourse with his wife, which passed off normally, there being no undue excitement. He went to sleep, and about two hours afterward he woke up with a painful erection, which lasted all the next day; he worked all the following night with his trousers unbuttoned, suffering great pain.

I saw him about 7 A.M., sitting on a chair holding his penis, which was very painful on being moved and handled. On examination I found the organ very rigid and enlarged to its fullest extent, although the glans penis did not participate in the enlargement to the same degree as did the rest of the organ—in fact, it was but little larger than in its normal flaccid condition. An examination by rectum showed that the prostate was not much enlarged. The crura were greatly congested. Cremasteric and abdominal reflexes were absent. No plantar reflex. Knee-jerk exaggerated. Pupil of left eye smaller than right, but both responded to light and accommodation. I suspected spinal trouble, possibly a congestion or small hemorrhage around the center of erection in a previously diseased cord. I prescribed bromides and morphine and put him to bed. On my return in the afternoon I found him still in the same condition. I ordered opium and belladonna suppositories, with ice to the spine, continuing bromides. The next day hyoscine hydrobromate was added to the treatment. The application of ice was kept up religiously for two days, when it seemed to aggravate the pain. Heat also was of no benefit. The application of laudanum and sweet oil gave comfort. Remedies in the shape of lupulin and monobromate of camphor, etc., were of no avail. Massage to the prostate and crura would ease the pain for about half an hour.

For the first few days the patient obtained ease by change of position, such as that incident to sitting up in a chair for probably fifteen minutes. Afterwards he was unable to sit longer than thirty seconds. Therefore sitz baths were of little use. The only position in which he could derive even comparative comfort was on the back with the knees closely drawn up; the lateral decubitus was painful.

May 30 I had him cupped over the spine and leeched in the perineum; this eased his pain for about twelve hours. During all this time he was unable to void urine, necessitating catheterization sometimes twice and sometimes three times in every twenty-four hours. The amount drawn each time was from one to one and a half pints. After cupping, cold applications were again tried, with no success —in fact, they increased his pain. Laudanum and oil was again tried, but failed. Cold cream did well for one day. Sitz baths were persevered in.

A urethritis now developed, due to constant catheterization, although every precaution was taken to prevent it. Iodide in increasing doses was added to the treatment of morphine and bromide.

Dr. Edward Martin saw the case in consultation with me on June 12. He agreed as to the nature of the cause. He tried instillations of cocaine to the deep urethra, with no success. He advised the actual cautery over the spine, morphine pushed to the limit, ergotin, applications of cold to the rectum by the aid of Peterson's bag, and continuance of the iodide and sitz baths. Severing the pudic nerve was spoken of as a last resort, but not deemed advisable at this time.

The cautery was not used, as the dorsal decubitus was the only position he could rest in, and already two congested and painful spots on each side of the spine had called for attention as early as the third day of his trouble. The rectal bag, filled with two ounces of ice water, gave a good deal of pain due to pressure. The psychrophor was then used instead, giving him more comfort and relief than anything so far tried.

He was now taking 30 grains of iodide four times daily. For several days signs of improvement were noticed, when the pain again returned in all its fury, which was so disheartening to the patient that he begged to have the operation of cutting the nerve performed.

Dr. Martin saw the case again with me on the 14th of June, when anesthesia with ether was tried. Under complete anesthesia there was no change. The organ still remained as rigid as before. We then decided to continue the treatment for another week, and if no improvement would show itself Dr. M. was to stretch the nerve instead of severing the same, a procedure that suggested itself to me as worthy of trial, since the suffering might thereby be relieved until the cause could be removed, and permanent impotence would not necessarily follow.

The sitz baths were still kept up, and each day the patient was able to sit a little longer. The time of his ability to sit very gradually lengthened from thirty seconds to ten minutes. The psychrophor still continued to be a great comfort.

June 22 he voided urine voluntarily, and the organ showed signs of losing its perfectly erect condition and leaned somewhat to the side, limbering up as it were. At the end of the fourth week it could be bent so far as to touch the leg.

The patient was now allowed to get up a little each day. Cold douches along the spine and posterior part of legs were ordered, ergotin was dropped, and morphine was gradually reduced. Inunctions of mercury were added and iodide continued.

At the end of the sixth week the organ was hanging in its normal flaccid condition, although its body was still very heavy. The patient was then ordered to Atlantic City for several weeks, where he regained strength rapidly, and on August 13 returned to his work, but was not able to bear the strain of work as well as previously. There were no subsequent signs of erection, nor did this seem to worry him.

During all this period his temperature ranged from 99° to 100°, pulse 84 to 118.

There was only one day when a plantar reflex was noticed. The cremasteric reflex returned during the time he made the first improvement, but was absent on his condition getting worse again; it returned to normal as he again improved. The feeling of constriction around the waist persisted.

September 17, 1901. Mr. B. again presented himself at my office, very much the worse for his steady work; this time not complaining of priapism, as that organ had lost all tendency in that direction, but suffering with sharp pains in his left hypochondriac region, headache, dizziness, and poor eyesight. He had up to this time, with the exception of about ten days, continued the iodide and mercury treatment. On examination I found the spleen, as well as the left lobe of the liver,

very much enlarged and hard; he was very anemic, and on standing with closed eyes swayed; his gait was uncertain, and he became tired very easily on walking a short distance.

Dr. T. B. Schneideman examined his eyes and found the following:

Right eye: Vision 4/6, media clear, marked optic neuritis, disk swollen, outlines obscure, several small hemorrhages in fundus near disk, veins enlarged and very tortuous.

Left eye: Vision 4/6, optic neuritis same as right eye.

Right pupil slightly larger than left. Both pupils react.

September 27, 1901. Dr. Ghriskey, clinical pathologist to Protestant Episcopal Hospital, examined blood and urine.

Blood count as follows: Red blood-corpuscles=2,428,000, hematin=53 per cent, white blood-corpuscles=766,000.

Differential count of 500 cells.

Myelocytes	39.8 per cent
Polymorpho. W.	49.8 per cent
L. Lymphocytes	2.0 per cent
S. Lymphocytes	0.6 per cent
Eosinophiles	5.6 per cent
Basophiles	2.2 per cent
	100.0 per cent

During the count three nucleated red corpuscles were noted.

Diagnosis: Spleno-myelogenous leukemia.

Examination of urine: Color—amber, faint opacity. Reaction—mod. acid. Sp. gr.—1018.

Albumin: Well defined reaction (heat and acetic acid). Centrifugated specimen: Sediment slight amount, dense.

Microscopic examination: Fairly numerous medium and broad, dark, granular casts, stray pus corpuscles, and a few medium and small epithelial cells.

From the result of this examination of the blood there is no doubt that Mr. B. is suffering from leukemia, and the question arises whether the priapism was due simply to leukemia and not to a degeneration of the cord, of syphilitic origin, as was the original diagnosis, or whether the leukemia was caused by syphilis.

I am inclined to believe that either the leukemia was caused by the specific disease, or that they both exist, independent one from the other. In our patient, if you will note in the foregoing treatment of his priapism, the symptoms of priapism showed no signs of improvement until iodides and mercury were given, the iodides in increasing doses, and the best results being obtained the larger the doses of iodides. He is now taking 75 grains of iodide three times a day with no symptoms of iodism.

In leukemia, iodides may be and are given with some benefit, but only in small doses, and if continued too long are liable to do more harm than good. My experience with leukemic patients proves that iodides given in increasing doses would produce iodism very quickly unless a history of specific trouble existed.

The patient is now taking 75 grains of iodide three times a day, and unguentum hydrargyri applied by means of woolen binders; at the same time arsenic, iron, and suprarenal gland are given, as well as extract of red bone-marrow. Within the last four days there have been signs of improvement. His dizziness is not quite as marked. He does not sway nearly as much on standing with closed eyes. The spleen does not seem as hard or quite as large.

INSTRUCTIONS TO STUDENTS ADMINISTERING ETHER.

By George Morton, M.D.,
Instructor in Surgery, University of Pennsylvania.

Before etherizing:

(*a*) Examine the urine, especially for albumin and sugar, and if either one is present the operator should be notified and his further decision awaited before starting the ether. Both ether and chloroform are irritants to the kidneys, ether the less so.

(*b*) Examine the heart for any organic disease. If present it would not necessarily prevent the giving of a general anesthetic if, in the judgment of the operator, the operative condition absolutely required it, but it would influence the etherizer in the particular watchfulness he would exercise in regard to the heart action and pulse during the course of the etherization.

(*c*) Examine the lungs for same reason —the presence of pulmonary disease might require the selection of some other

anesthetic than ether on account of the latter's irritant effect on the lungs.

(*d*) Have the stomach empty—light breakfast of tea and toast or such food as will be entirely digested by the time for operation (milk sometimes curdles and is not suitable as a rule). The presence of food in the stomach during etherization increases the nausea which in the majority of cases follows the use of ether, and in vomiting may also be inspired into the lungs.

(*e*) Have the bowels empty—a dose of salts or some other laxative the night before the day of operation, an enema the morning of operation, and if operation is to be in the anal or rectal region, a second enema an hour or two before time of operation.

(*f*) Have the bladder emptied an hour or two before the time for operation, unless, for some special reason indicated by the operator, this is not desired.

(*g*) Count the pulse—the patient might have an abnormally rapid, slow, weak, or irregular pulse owing to disease or idiosyncrasy, and if not known the etherizer might be unnecessarily alarmed during the course of the etherization. Possible increased rapidity of the pulse from nervousness of the patient just before starting the administration of ether, and the struggles of the patient and the physiological effect of ether after starting, must be considered and allowed for if necessary.

(*h*) Always ask if there is anything loose in the mouth, such as false teeth or plates, loose teeth, tobacco, chewing-gum, candy, or anything that might become loosened during the course of the etherization, fall back in the respiratory passages, and block the glottis. Remove any such bodies.

(*i*) Ascertain the presence or absence of glass eyes or ankylosed joints so as not to be misled in reflexes, etc., during the course of the etherization.

On starting the etherization first:

(*a*) Put the *dry* cone or whatever apparatus is used over the patient's nose and mouth, and let him become used to it for a few moments; then drop the ether steadily and continuously all over the surface of the cone until the patient is fully etherized. being careful to see that the cone does not become so excessively saturated as to allow the ether to flow through it into the mouth, or nose, or on to the skin.

(*b*) Tell the patient to *blow out* against the cone with long, deep, but not straining respirations, because he thinks it relieves him to blow away the gagging, irritating vapor, and by so doing he necessarily takes deep *inspirations* and thus plays into your hands by satisfactorily inspiring the ether even after consciousness is partially lost. If told to take deep inspirations, some patients after doing so for a few moments will lose control of themselves, and by holding their breath as long as possible, or taking short, shallow inspirations, unnecessarily retard the etherization. Sometimes artificial respiration has to be practiced in such cases to force them to inspire and come under the desired influence.

(*c*) It is often well to tell the patient to hold one or both arms straight up in the air as long as he can. It gives him something to think about besides the ether, and is also a help to the etherizer by showing that the patient is coming under the influence of the anesthetic as he drops and relaxes the arm. When the latter occurs (close of the first stage of etherization) slight operations, such as opening of small abscesses, felons, etc., can be done without further etherizing.

During the administration of the ether the four most important things to watch are: (1) Breathing; (2) color; (3) pulse; (4) pupils.

1. *Breathing*—the most important. The most common cause of interference with breathing during etherization, especially when the patient is lying on his back, is a mechanical one due to the falling back of the tongue over the air-passage. If this should occur, put one or two fingers behind the angle of the lower jaw underneath the ear on one or both sides as is deemed necessary, and push the lower jaw well forward and keep it forward as long as is necessary. This maneuver will usually replace the tongue and restore regular breathing. Turning the head on one side and keeping it in that position also tends toward bringing about the same result. Sometimes these fail—then the mouth should be forced open with a mouth-gag or other instrument, trying not to break

the teeth in so doing, and the tongue drawn forward and held forward forcibly as long as is necessary by means of a special tongue-forceps, which should always be at hand, being careful not to bruise or crush the tongue any more than is absolutely necessary. In operations about the mouth where space is limited and needed by the operator, and it is apt to be necessary to hold the tongue forward and to one side throughout the operation, a strong, thick thread passed through the tongue about half an inch from the tip will hold this organ forward sufficiently and with less damage than most of the forceps now in use. The mouth and throat should also be cleared of any mucus contained therein. If respiration is not restored by these means rhythmic traction of the tongue, external tickling of the larynx with the finger-nail, lowering of the head, or a dash of ether on the bared chest or epigastrium by reflex action will sometimes cause the patient to take a long breath. If most or all of these procedures fail, and they should be done in as little or less time than it takes to tell of them, artificial respiration should be commenced and kept up until the patient resumes regular breathing again, when the administration of the ether can be resumed.

Shallow, jerky, irregular breathing, if not due to obstruction from the tongue or excessive collection of mucus in the mouth, may be due to the inspiration of an unnecessarily large amount of ether, or to the general condition of the patient from disease, or to shock from the operation or from prolonged etherization. In that case a lessened amount of ether, the application of external heat, and hypodermic administration of strychnine, atropine, etc., in doses and frequency to suit the case, would be indicated. The simultaneous administration of oxygen with the ether at such times, putting the tube connected with the O tank through the meshes of the ether cone, is usually of great and immediate benefit. Care should be exercised in regulating the flow of O so that the patient does not become intoxicated or overpowered by an excess.

The most common cause of interference with respiration, next to the bad position of the tongue, is the excess of mucus which collects in the mouth and throat of many patients owing to the overstimulation of the mucous membranes by the irritant vapor of the ether; and if this interferes with respiration, as it is apt to do, the jaws must be kept separated by means of a mouth-gag carefully inserted so as not to injure the teeth or gums (the part of the gag that comes in constant, forcible contact being covered with rubber or gauze), and the mouth and pharynx must be sponged out.

The presence of a small amount of mucus in the back of the throat or pharynx, enough to cause the patient to gurgle, but not sufficient to interfere with the force and regularity of the respiration, is a helpful assurance to the etherizer's ear that his patient is breathing satisfactorily. The dread of most etherizers is a quiet breather who may stop breathing without his notice, and requires the almost constant presence of his ear at the patient's mouth to be sure he or she is all right. After the patient has become fully etherized a sudden halt in the respiration may be a forerunner of an attempt to vomit; this is a sign that the patient is "coming out" and requires more ether. A sudden temporary halt is also usually observed when the anal sphincter is stretched, for some reason not yet definitely known.

It is well to depend chiefly upon the ear so far as watching the respiration is concerned, for if the movements of the chest are considered indicative, the etherizer may be misled by pushing, pulling, and other movements due to the operator or assistants,especially in operations about the upper half of the trunk. When the patient is lying on the chest or nearly so, as in operations on the kidneys, etc., the tongue will usually fall forward by gravity and cause little or no trouble, but it is wise to see that no undue pressure is exerted on the chest or diaphragm by such a position, and to lessen such by the use of pillows, etc., or some slight change of position.

Coughing when the patient is half under the influence of the ether is generally due to irritation of the fauces by the vapor, and is best overcome by "pushing" the anesthetic.

2. *Color.* Cyanosis, dark-blue color of the face and lips, is usually due to some interference with the respiration, or in

some full-blooded, plethoric individuals to too rapid absorption of the ether into the blood. If due to the latter condition and is pronounced, removal of the cone permitting the inspiration of pure air for ten or fifteen seconds will be immediately efficient. If due to interference with the respiration, remove the cause, which is usually the malposition of the tongue or an excessive amount of mucus.

Pallor. If not due to the previous general condition of the patient from disease or accident, it is due to shock from excessive or long-continued etherization, or both, or from the operation, loss of blood, etc. You would also be apt to have other symptoms of shock associated, such as a rapid, weakened, irregular pulse, dilated or contracted pupils, cold, clammy skin, etc. Lessening or if possible stoppage of the ether, the external application of heat, hypodermic administration of strychnine and other suitable drugs, etc., would be indicated in such cases.

If in doubt about the color of an etherized patient (it is rather difficult in some types of the African race, for instance, to tell when they are cyanosed merely by the color of the skin) evert the lip and inspect the mucous membrane.

3. *Pulse.* In the average surgical case, and the majority of such cases are in a general healthy condition, if the color and breathing are satisfactory, the pulse will give little or no trouble. It is apt to be accelerated at the beginning of the etherization, owing to the nervousness of the patient and the physiological effect of the ether, but after the patient is fully under the latter's influence, it should resume the normal or almost normal rate until it is affected by the length of the etherization or shock of the operation. If it does not run above 110 or even 120 in the adult, and remains full, strong, and regular, and the breathing and color of the patient is satisfactory, it need cause no anxiety. If it runs above this—140 to 150 to the minute—and becomes weak and irregular, it should be watched more closely, and hypodermically stimulated with strychnine, digitalis, whiskey, etc., as is required. The same treatment applies to a pulse which becomes abnormally slow, thus showing evidence of severe shock.

Of course if, owing to some wasting disease such as tuberculosis, malignancy, typhoid fever, pneumonia, etc., it is weak and rapid at the beginning of the etherization, it must be watched and treated throughout the administration as is needed.

4. *Pupils.* Persistent and extreme dilatation or contraction is a sign that the patient is getting too much ether, or else becoming shocked from some other cause, which latter must be found and removed if possible, and the patient treated as is indicated.

Temporary, spasmodic contraction or dilatation, or rolling of the eyeball, are evidences that the patient is not fully etherized, and not a sign of danger.

The most important signs indicative of complete etherization are loss of muscular reflexes, corneal or conjunctival reflex, and pupilary reflex.

The muscular reflex is absent when the muscles are relaxed; the arm or leg falls dead when raised and dropped, and the patient lies quiet, completely relaxed, and unconscious.

The corneal or conjunctival reflex is absent when the eyeball is fixed, and the mucous membrane covering the eyeball and inner surface of the lid does not respond to or resent the touch of a finger. Whenever this test is made, and it should be done very gently and lightly, the eyelid should be closed with a slight pressing rubbing motion after each touch so as to prevent any irritation or ulceration by the frequent friction of the finger.

The pupilary reflex is absent when on suddenly exposing the pupil to light by quickly separating the lids it fails to dilate or contract, usually remaining fixed midway.

Sometimes the muscular and sometimes the corneal reflex disappears first, but the pupilary is usually the last to be influenced by the anesthetic, and if the patient is kept just sufficiently under the influence of the ether for operative purposes (the ideal way), may persist throughout the etherization. Therefore the pupilary reflex is not of so much importance in regard to getting the patient under the ether's influence as are the other two, but as it is apt to be the first of the three reflexes to reappear, having been abolished, it is val-

uable as a sign that the patient is "coming out."

It is well to have both the muscular and conjunctival reflexes abolished before actually starting the operation, because if you depend on the muscular alone, which is the one that concerns the operator, the patient may lie perfectly quiet and relaxed and seemingly fully etherized until the incision or other first operative procedure is made, when he will at once resist. The eye reflexes, however, he has no control over, and when one of them is absent he is very nearly or fully etherized.

Once in a while a continuous or nearly continuous muscular twitching or tremor will persist after the reflexes are abolished and the patient fully etherized. While not dangerous to the patient, as a rule, this condition is very annoying and troublesome to the operator, especially in amputations, operations about the abdomen, etc. A little more or a little less ether, change of position of the limb or body, etc., will sometimes stop this trouble, which happily is seldom met with.

After getting the patient fully etherized, the continuous dropping of the ether, provided excessive saturation of the cone has not already stopped it, may cease, and the fluid may be dropped on in small quantities every few minutes as the reflexes, especially the pupilary (if absent), indicate. A good general rule when using the Allis inhaler or similar form of apparatus is to run your finger over the top of the cone frequently, and as you find it getting dry add a few drops and thus keep it moist, for if you wait for the appearance of either the muscular or conjunctival reflexes to guide you some cases may get ahead of you, struggle, vomit, and otherwise add to the risk, annoyance, and delay of the operation. The time to entirely stop the administration of the ether is usually indicated by the operator, but can generally be done as soon as the skin stitches are tied and the application of dressing begun.

Relation of Etherizer to Operator and Operation.—The etherizer is responsible for the general condition and, aside from the direct effect of the operative procedures in course of execution, the life of his patient, and should always be in full control of his case.

Should any of the above mentioned difficulties arise, he should not let the patient get in any extreme danger by hesitating to use necessary measures through a desire to avoid interrupting the operation should such be necessary, but on the other hand he should not needlessly annoy, interfere with, or hurry the operator, such as practicing artificial respiration on account of trouble or arrested breathing before trying some of the other less drastic methods of treatment.

About every five or ten minutes he should notify the operator of the rate and character of the pulse and respiration, pallor if present, and general condition of the patient, so that the operator may know whether to hurry or to more satisfactorily prolong the operation, look for and check excessive or overlooked bleeding, etc.

Neither ether nor chloroform should be given near an open fire, lighted gas-jet, or other flame, on account of their explosive qualities. When using the Paquelin cautery, see that the ether bottle and cone are removed to a safe distance and the atmosphere about the site of application well cleared of the ether vapor before the cautery is brought near. The same precautions apply to chloroform.

Ether should be given pure or almost pure, in contradistinction to chloroform, which is given very much diluted with air. Chloroform is administered by dropping a few drops at a time or very slowly upon a few layers of gauze held two or three inches away from the mouth and nose.

When etherizing infants and very young children and others with unusually sensitive skins, and in all cases when chloroform is used, it is well to anoint the chin, lips, and nose with glycerin or cosmoline, or some such preparation, so as to prevent any blistering or other form of irritation. While chloroform should not be brought close enough to the skin to touch it, the patient's struggles or other accident might occasion it.

Ether is more disagreeable to take than chloroform as a rule, and requires longer time and much greater quantity for full anesthesia, but is safer. Chloroform kills by rapid action upon the heart, whereas ether more slowly affects the respiration, a much easier complication to treat than the cardiac condition.

Nausea is not so frequent after chloro-

form as after ether, but when present is more persistent and annoying.

The amount of ether and time required to get an average adult fully under its influence varies with the individual and the etherizer, but a general average is from four to six ounces and six to ten minutes. The relation of the actual amount inspired to the total amount used is influenced by the possible struggles of the patient and consequent difficulty of holding the cone tightly over the mouth and nostrils, and the evaporating surface, form, and fit of the cone or whatever apparatus is used. Of course, a much less relative amount is required for young children, and also less is needed in the aged. After full etherization is attained, the amount which subsequently must be used depends on the length of the operation and condition and individual character of the patient. I have etherized an adult fully with two ounces, and for another have had to use ten. I have kept one patient fully under for three hours with 15 ounces, and have been compelled to use twice as much for another.

The amount and time required to fully anesthetize with chloroform is usually about two drachms, and from three to five minutes if the patient is tractable. When using chloroform especial attention must be paid to the pulse throughout its administration, although the other conditions must not be neglected.

When considering the pulse in young children, the normally rapid rate in comparison with that of adults must be recalled.

Owing to the necessarily influenced respiration, a crying child can be rapidly etherized if the cone is kept tightly over the mouth and nose.

The value of inhalations of vinegar, preanesthetic hypodermic administration of drugs, injections of salt solution, etc., to avoid the nausea that usually follows etherization, is questionable.

After the Administration.—The time it takes a patient to recover complete consciousness after full etherization varies, but ranges from half an hour to three or four times as long, and in extreme cases even longer, and depends upon the amount of ether inspired, length of the etherization, and condition and character of the patient. Some sleep it off; others are delirious, violent, and noisy; and others simply vomit, retch, moan, etc.

After the etherization and operation are over the patient should be put in bed, external heat in the form of bottles or cans or rubber bags filled with hot water, hot bricks, etc., should be placed about and against patient (with a blanket or other cloth intervening to prevent blistering or burning), and if necessary hypodermic stimulants are employed.

The patient should be constantly attended until he has recovered complete consciousness, so that he will not disturb dressings or the affected part, fall out of bed, inspire mucus or vomited material, and thus become cyanosed, or suffer from any considerable respiratory embarrassment. If necessary the head should be kept turned on one side, the jaw well forward, and the mouth clear of accumulated or vomited stomach-contents, mucus, etc.

CAESARIAN SECTION VERSUS ABORTION OR MISCARRIAGE IN WOMEN WITH DEFORMED PELVES.

By M. H. Bishop, M.D.,
Bay City, Mich.

It seems of interest to report the following case because in the minds of the profession at large the danger and difficulty of Cæsarian section is greatly exaggerated, the belief obtaining that abortion or miscarriage is a safer and easier procedure than active surgical interference, when it is obvious that delivery at term cannot be accomplished in the natural way.

The patient, thirty-eight years old, four feet high, of healthy and well formed family, was a well proportioned dwarf, barring her large head. Her husband was but six inches higher, and was distinctly kyphotic. She had previously twice aborted, and became pregnant the third time February 8, 1902. Her physician proposed to induce the abortion, and was about to induce miscarriage in the sixth month of pregnancy when it was discovered that the pelvic outlet was too small for the passage of even a six-months fetus. She was referred to me October 20, 1902. The conjugata vera was 1½ inches. As-

sisted by Drs. Landon, Hauthurst, Northcott, McLandress, and Swantek, I operated November 15, after the patient had suffered nearly all the previous night from pains in the lower abdomen, although the os uteri was not much dilated. Since I had decided to remove the uterus it did not seem needful to wait for labor to become well established. Through a median abdominal incision, beginning two inches below the ensiform cartilage and extending to within one inch of the symphysis pubis, the uterus was delivered, and closed as to its lower segment by an elastic ligature. The peritoneal cavity was protected by approximating the skin edges of the incision behind the uterus, and by placing in position a large pad. The Fallopian tube pointed downward, and there was a bulging on the front surface of the uterus, suggesting the probability that the placenta occupied an anterior position. Hence the incision was made in the top of the organ, opening through a myoma the size of an egg, but fortunately avoiding the placental site. The child was delivered by grasping both feet, and at once cried aloud. The ovarian arteries, round ligaments, and uterine arteries were ligatured, the vesical peritoneum was detached, and supravaginal amputation of the womb was performed. A continuous catgut suture approximating the anterior and posterior peritoneum was applied, and the uterine stump was allowed to retract into the abdominal cavity. The mother recovered promptly, and four weeks after her operation took full charge of her infant, which weighed seven pounds at birth. The uterus contained seven fibromyomatous tumors of the subperitoneal and interstitial varieties, the sizes ranging from that of an egg down to that of a small Lima bean.

SCOPOLAMINE-MORPHINE ANESTHESIA.

WILD, of König's clinic, sounds a note of warning (*Berliner klinische Wochenscrift*, March 2, 1903) against the use of scopolamine and morphine for the induction of anesthesia. He used these drugs according to the method of Blos in eight cases, in the last of which such alarming results were produced as to cause him to abandon all further experimentation.

The patient, a girl eighteen years of age, to whom 15 dmgr. of scopolamine and 9 cgm. of morphine had been given within two hours, and to whom it was necessary to administer 45 Cc. of ether in order to produce complete narcosis, began to shows signs of respiratory disturbance, of the Cheyne-Stokes type, two hours after the operation. Later her breathing became stertorous, pulse imperceptible, pupils dilated, and all reflexes lost. Artificial respiration, the faradic current, hypodermic injection of camphor, and saline transfusion were resorted to; as a result of which the patient was revived.

In six cases ether was required to complete the anesthesia. Vomiting did not occur in any case during anesthetization, but occurred after operation in three cases. The quantity of the drug given varied from 10 dmgr. of scopolamine and 6 cgr. of morphine, to 17 dmgr. of scopolamine and 10.5 of morphine, 15 dmgr. of the former and 9 cgr. of the latter being the usual dose.

As a result of further experience with scopolamine-morphine anesthesia, SCHNEIDERLIN has reached the following conclusions (*Münchener medicinische Wochenschrift*): Its disadvantages are that the effects of the drugs must be tested by a preliminary trial before giving enough to induce anesthesia, which in many cases would cause too great a loss of time, and that it is necessary to watch the respiration after anesthesia has been produced. Its advantages are that it is safe when used in properly tested cases, that it requires no anesthetist, and that it produces no psychic shock. He thinks many of the bad results reported by those who have employed this method are due to their not testing the effects of the drugs before giving enough to produce anesthesia, or either to the fact that they gave too large doses or that they did not wait for anesthesia to be fully established. He also believes that better results may be obtained by giving a moderately large dose at first, and then following it with one or more smaller doses.

The Therapeutic Gazette

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Leading Articles.

DIET IN BRIGHT'S DISEASE.

More than ten years ago the writer of this editorial in one of the earlier editions of his Text-book of Therapeutics emphasized the fact that many cases of nephritis do not do well if they are made to subsist chiefly upon a milk diet, and more than once in the editorial columns of the THERAPEUTIC GAZETTE we have called attention to the folly of the habit which is so widely followed of ordering skimmed milk for these patients, thereby depriving them of the fat which milk ordinarily contains, and which is entirely harmless unless it is present in excessive quantity. Indeed, the longer we study these cases the more convinced we are that it is a mistake to so strictly regulate the diet in Bright's disease as to interfere with the patient's nutrition, and to constantly impress upon him the fact that he is sufficiently ill to make severe deprivations absolutely essential. Even with our comparatively advanced knowledge concerning nutritive processes in the body we are still wofully ignorant of the complex problems which are connected with metabolism, and at some future time it will probably become evident that certain cases of Bright's disease are not benefited at all by a milk diet, and that others are not materially modified in their course by changing the diet in any way whatever. We have also called attention in these columns to the fact that the red meats, which have so long been taught to be harmful in cases of Bright's disease, are in reality, when taken in moderation, no more harmful than the white meat of chicken, since chemical analysis fails to show a sufficient difference between these two forms of proteid food to justify us in refusing to give patients these articles upon which so many have learned to rely.

Our attention has once more been called to this very important point by a most interesting article which has been published in *Medicine* for June, 1903, by Dr. Alfred C. Croftan. This article, which is based upon scientific research and a knowledge of metabolic changes in the body, emphasizes the fact that an excessive milk diet may not only be useless in Bright's disease but may be actually dangerous. He first points out that while milk is theoretically capable of maintaining nutrition, practically it is incapable because such enormous quantities of milk must be consumed to provide an adult with a sufficient amount of nutriment that they are prohibitive, or if not prohibitive are disadvantageous, in that the absorption and elimination of these large quantities of fluid unduly strain the digestive and eliminative organs. Again, milk largely lacks the quantity of iron which ordinary food contains. Thus, while it presents to the patient the same quantities of calcium, magnesium, potassium, and phosphorus as is found in the ash of newborn animals, it contains six times less iron; this lack of iron being made up in the young by the storage of this metal in the liver, and possibly in other organs, during intra-uterine life. Again, the quantity of proteid which is present in milk is excessive. As Croftan points out, a normal adult requires approximately 3000 calories a day to maintain full nutri-

tion. One quart of milk has a caloric value of about 700, and therefore it would take about 4 to 4½ quarts of cow's milk to present sufficient nourishment. This large quantity of milk contains nearly 170 grammes of proteid, whereas the normal average quantity of proteid ingested by a healthy adult does not exceed 100 grammes a day. Croftan then goes on to point out that an excessive milk diet, if taken in the quantities which are necessary for the maintenance of nutrition, forces the kidneys to eliminate enormous quantities of liquid, which they are ill prepared to do when suffering from disease. Again, such a diet causes the kidneys to eliminate large quantities of urea and much phosphates, and here again kidneys which are impaired in function because of disease are forced to perform an excessive amount of work. Dr. Croftan also thinks that these large quantities of fluid increase the labor of the heart and the stress on the blood-vessels, and while we doubt that the latter assumption is correct, the facts already brought forward seem to us sufficiently convincing.

We have long known and carried into practice the methods which Croftan advises. It is entirely possible to arrange a suitable diet for cases of nephritis without in any way throwing undue stress on any of the organs, and at the same time maintain the nutrition of the body. Unskimmed milk—that is, milk containing cream—is, as we have already said, advisable, since the fats add a very considerable number of calories to the milk, and by the use of carbohydrates an additional number of calories can be provided the patient, who at the same time does not receive an excess of fluid. As Croftan well says, one liter and a half of milk, plus a quarter of a liter of cream, for instance, contains approximately 50 grammes of proteids (equal to 225 calories), 75 grammes of carbohydrates (equal 337 calories), and 150 grammes of fat (equal 1350 calories), or a sum total of about 1912 calories. In order to make up the difference of 1088 calories a little meat, eggs, sugar, butter, toast, zwieback, rice, fresh vegetables, etc., may be allowed with impunity, care being taken that the caloric value of 3000 is not greatly exceeded, and that all articles of diet that lead to the formation of irritating urinary end-products (spices, condiments, etc.) are avoided. A discussion of the complete dietetics of nephritis would lead us beyond the scope of this article.

We have called attention to this paper because we are deeply interested in this most important subject, because we are glad to find that our own practice, based largely upon clinical observation, finds such excellent scientific support, and because we hope that the readers of the THERAPEUTIC GAZETTE will bear in mind the fact that in studying diet we should not follow hard and fast rules laid down in text-books, but rather those conceptions of what is proper which we may form after careful consideration of the needs of the individual patient.

IMPORTANT FACTS IN REGARD TO THE TREATMENT OF ACCIDENTS TO THE CRANIAL CONTENTS.

One of the most encouraging things about the progress which is being made in medical and surgical therapeutics at the present day is the fact that new methods of treatment and observation are not based upon individual opinion, but upon scientific research, which produces results upon which we can rely, and which we can regard as being permanent rather than changeable, as have been many of the fashionable plans of treatment in the past. We wish to call attention in this editorial note to the very valuable contribution made by Dr. Harvey Cushing, of Baltimore, to the study of the effect of cerebral compression upon blood-pressure and upon the relationship of blood-pressure to the maintenance of life after cerebral injury. Every surgeon of large experience is fully aware of the fact that the presence of a large foreign body, such as a mass of extravasated blood, inside the skull is followed by a very great increase in arterial tension, and by a slowing of the pulse; the slowing of the pulse being partly due to irritation of the vagus center and also due to the increased tension of the vessels. For years it has been considered that this high tension pulse was an evil rather than a blessing, and in many cases of cerebral apoplexy it has been customary to bleed the patient freely, with the idea that by

diminishing blood-pressure in this way we would also diminish the quantity of blood which was being extravasated through the ruptured artery. The experiments of Dr. Cushing upon animals seem to prove that this high arterial tension of which we have spoken is designed by nature for the purpose of maintaining an adequate circulation of blood in the vital centers of the medulla, since if a high arterial tension is not maintained the pressure inside the skull causes so much anemia of these parts that they soon become exhausted and paralyzed. In other words, the high tension of cerebral compression is a physiological means of protecting the vital centers at the base of the brain.

It is interesting to note that since Dr. Cushing's first contribution upon this subject he has had an opportunity to make accurate studies upon a number of cases in which cerebral compression was present in human beings, and that the result of these studies has been to confirm and to prove positively the correctness of the observations which he had previously made upon animals. As he well points out, there are three stages of cerebral compression. In the first the encroachment on the intracranial space by the foreign substance is not sufficient to seriously compromise the circulation, and the cranial contents are able to adapt themselves to the new conditions. As a result of this the circulatory changes are not marked. If, however, the pressure inside the skull becomes still greater, evidences of disordered cerebral functions are inaugurated, such as headache, vertigo, roaring in the ears, some delirium and unnatural sleep; and at this time ophthalmoscopical examination of the retinal vessels may reveal the veins to be tortuous and distended. In the third stage of advanced compression actual anemia at the base of the brain exists. If the vasomotor center has sufficient strength to maintain a high arterial tension, life is prolonged. Should the vasomotor center fail as a result of diminished blood-supply and from exhaustion, we have developed the so-called "terminal stage," in which the blood-pressure falls, the heart and circulation become irregular, the coma deepens, and death ensues. It is evident, therefore, that in many of these cases operative interference is absolutely necessary, since if it is resorted to early enough, the falling arterial tension may be restored and life saved; whereas if operative procedure is delayed until the vasomotor center is no longer active, operative interference cannot promise much relief. It is also evident from Cushing's studies that in some cases of cerebral apoplexy operative interference may save life, particularly where it is evident that the hemorrhage has ceased, and that the symptoms which are present are resulting from the blood which has been poured out into the ventricle, or, in the case of meningeal hemorrhage, between the meninges.

All surgeons who see head injuries should carefully peruse Dr. Cushing's paper, and all physicians should do likewise, since it will aid them materially in carrying out a rational line of treatment when they are called upon to relieve patients who are suffering from medical rather than surgical conditions inside the skull, which nearly always threaten the patient's life. For studies such as these Dr. Cushing deserves the highest praise, because of their originality, because of the important bearing which they exercise upon proper plans of treatment, and finally, and by no means least, because they encourage other men to leave the well trodden paths of routine work, and to add something to medical knowledge by original research.

ANOTHER FACTOR IN THE DISTRIBUTION OF TYPHOID INFECTION.

Strictly speaking, a consideration of prophylaxis hardly finds a place in the editorial columns of a journal devoted to treatment, yet on the other hand it is quite as much the function of the physician to prevent illness as to modify it. Our readers are probably well acquainted with some of the researches which have been made in the last few years as to the additional means by which typhoid infection may be conveyed from patient to patient. First, we learned that contaminated water was the most frequent cause of the transmission of typhoid fever; then that oysters and other shell-fish might readily convey the typhoid infection; again, that milk placed in cans which have been washed with infected water often spreads

the disease; and still more recently, the Spanish-American war and the researches of Dr. Coplin have proved to us that flies frequently carry the typhoid bacillus from the discharges of the sick to the food of the well. Still more recently we have noted with interest in *Medicine* for June, 1903, that Dr. Engelmann, of Chicago, points out that cockroaches may carry the infection. It is manifest, therefore, that the proper means of preventing typhoid lies in the complete and absolute disinfection or destruction of the fecal and urinary discharges of all typhoid fever patients, and it is only by this means that we can hope to materially modify the prevalence of this dreadful and all too frequent disease.

NEW CONCEPTIONS OF THE PHYSIOLOGICAL ACTIVITY OF CERTAIN REMEDIES.

The use of instruments of precision in clinical medicine has done much to increase our knowledge concerning the changes which take place in the blood, in the vascular system in disease, and when under the influence of drugs. Amongst the instruments which are being employed quite largely at the present time should be mentioned the Riva-Rocci sphygmomanometer, which has been considerably modified by American experimenters. As many of our readers know, this apparatus enables the clinician to obtain some conception of the arterial pressure without opening a blood-vessel, as is commonly done when studying blood-pressure in the lower animals. At present quite a number of researches have been made in regard to the variations in blood-pressure which occur in different stages of acute diseases, and under the influence of drugs which are supposed to exercise marked effects upon arterial tension. While it is perfectly true that physicians of experience are often able to reach fairly definite conclusions as to the condition of a patient's circulation by feeling the radial pulse with the finger-tips, it is manifest that a much more accurate method of determining the pressure of the blood is offered by a piece of scientific apparatus. That this is a fact has been proved by numerous researches, and it is now found that some of the remedies which heretofore have been thought to exercise the power of vasomotor stimulation in reality possess very little influence in this direction.

We have pointed out in earlier editorials that it is a mistake to assume that the injection of considerable quantities of normal salt solution into the subcutaneous tissues or into a vein can be expected to produce any rise of arterial pressure. It must not be forgotten that the blood-vessels of the body are capable of holding several times the quantity of blood which they normally contain, that they are elastic, and that when fluid is injected into them they dilate so as to adjust themselves to the increased quantity of liquid which they contain. There is therefore no real rise of arterial pressure resulting from the injection which has been resorted to. As a consequence it becomes manifest that in conditions of shock with associated vasomotor collapse and vascular relaxation the mere injection of normal salt solution into the subcutaneous tissues is in reality of little value to the patient, unless at the same time by the use of some drug it is possible to stimulate the vasomotor center or the peripheral blood-vessels in such a way as to cause them to contract, and thereby raise arterial pressure.

Experiments which have recently been reported in the *Johns Hopkins Hospital Bulletin* by Dr. J. B. Briggs and Dr. H. W. Cook emphasize these facts still further, and clearly show that some of the remedies which have heretofore been thought to raise arterial tension are in reality incapable of exercising any such influence. For example, it was found that the administration of alcohol practically produced no increase in arterial tension, whatever its influence may be upon actual cardiac activity. On the contrary, they found that strychnine and digitalin were capable of producing a rise in arterial pressure, and therefore recommend that these remedies be relied upon in conditions where there is manifest relaxation of the blood-vessels.

It will be remembered that in previous editorials we called attention to the fact that Crile has proved that in those instances where the vasomotor center is paralyzed and consequent vascular relaxa-

tion takes place, strychnine is of little value in that its influence cannot be felt by the paralyzed center; whereas adrenalin, which acts upon the walls of the blood-vessels, which are relaxed as a result of the centric paralysis, may produce all the good effects which the physician desires. It is manifest, however, that in some instances where the vasomotor center is not paralyzed, but simply depressed, the administration of so powerful a nervous stimulant as strychnine may be followed by advantageous results.

We have said before in these pages, and we wish to reiterate at the present time, that in our opinion vasomotor relaxation is a cause of death not only after accidents and surgical operations, but very frequently during the course of acute and chronic diseases, and we believe that physicians in general practice should make a careful study of arterial tension, first with the object of determining the real condition of the patient, and secondly in order to determine when remedies for the support of arterial pressure should be employed.

THE USE OF PARAFFIN IN PLASTIC SURGERY.

Though much has been written concerning the use of paraffin in plastic surgery, particularly because of its cosmetic effects in correcting malformations of the nose, the method has not achieved the popularity which its essential merits deserve, nor is even the practicing surgeon commonly familiar with the detailed method of its application. This partly because of its novelty, partly because it has been supposed that its main use was to beautify rather than to increase bodily health and fitness, and partly because a few deaths due to embolus have been reported as following its use.

Paget (*Lancet*, May 16, 1903) has delivered an excellent address upon this subject covering the history of the method, the credit of originating which he gives without qualification to Gersuny, and giving details as to its practical application.

In regard to the latter he warns the novice against experiments upon the living, holding that the whole performance should be thoroughly rehearsed beforehand. The paraffin used is sterilized by boiling before it is put in bottles, and should have a melting point between 108° and 115° F. Where it is to stand heavy and immediate pressure, as in the molding of a sunken nose, the higher melting point is preferable. Where the strain and pressure are less, as in the bolstering up of prolapsed mucous membrane, the lower melting point will suffice. It must be remembered that paraffin shrinks when it sets. For the injection of the paraffin into the loose submucous tissue of a prolapse, an ordinary antitoxin syringe works very well; but in correcting a nose there is considerable pressure, and the paraffin must be distributed very accurately; hence a special syringe is required, one that can be worked easily with one hand, one in which the piston slides smoothly, which does not leak, and which retains heat well and can be sterilized by boiling. Jacketing with a bit of drainage-tube usually suffices to retain the heat. A strong straight steel needle such as is used for exploring the pleura, one and one-half inches long, is commonly employed.

The paraffin is melted by putting it in water that is well above its melting point. The melted paraffin and the syringe are then put in a water-bath five or six degrees above the melting point of the paraffin. The syringe is filled and held under hot water while the needle, previously boiled and taken from a boiling solution, is screwed on. The injection is then made.

In remodeling a sunken nose, forty-three of which operations Paget has performed without embolism or sloughing or wandering of the paraffin into the eyelids, and with permanent results, so long as a needle can be inserted between the mucous membrane inside and the skin outside, the looks of the patient may be improved. The skin must be loose and not cicatricial. If the skin can be raised by the fingers and drawn forward into position, it is quite certain that the paraffin injection will be successful. The most favorable cases are those in which there is an abundance of loose, sunken skin, a fair length of face between the forehead and the mouth, and a well shaped and refined tip to the nose. The most unfavorable cases are those where the nose is shrunken, shriveled, and crumpled up by old syphilitic necroses. In

some cases it is necessary to straighten the nose or do some plastic operation before using the paraffin, and sometimes injections have to be repeated two or three times.

The needle is inserted low down, just above the tip of the nose, in or near the middle line, and is pushed upward. It is well to prick the skin first with a fine surgical needle set in a holder. Also just before making the injection the needle should be dipped for six or eight seconds in water that is just off the boil. The injection must be made rather rapidly, at the rate of one cubic centimeter every eight or ten seconds, so that all the paraffin may be soft at the same time and thus may be molded together. In favorable cases a satisfactory result may be obtained with two or three cubic centimeters. During the injection the assistant presses his fingers and thumbs hard and tight over the forehead and eyebrows and the inner angles of the orbits and the sides of the nose, keeping out the paraffin by hard pressure from these forbidden regions. After having made the injection and having allowed a few minutes for the puncture to seal, the syringe is withdrawn and put in a water-bath, and the nose is molded vigorously while the assistant lets cold water trickle over it. This molding should not be done too gently, and should be continued for ten or fifteen minutes until everything feels absolutely hard. Then a mask of cold wet lint is placed over the face and is changed frequently.

In one of the cases reported by Paget a small abscess formed nearly two weeks after the treatment. The final result, however, was very good. In three cases the line of puncture of the needle broke down, but did not prove to be a serious disaster. In a large number of cases there was failure to make the nose handsome, and in a few cases no good was accomplished. In none were there any serious complications.

Other uses to which paraffin injections have been applied are for the cure of prolapse and of incontinence in either the bladder or bowel. In the cure of rectal and anal prolapse the paraffin should be injected just beneath the mucous membrane and within the external sphincter, thus narrowing the orifice and producing a rigid wall which has no tendency to become everted. Considerable quantities are sometimes required, as much as one or two ounces. The results seem to have been excellent. Incontinence is treated in the same way, except that in the vesical incontinence of women the paraffin is injected beneath the mucous membrane of the vesical orifice.

The ease with which this method is applied and the comparative safety, the admirable results which it has yielded in suitable cases, make it a source of surprise as to the slowness with which it has been accorded general recognition and adoption.

THE RESULTS OF OPERATIONS FOR STRANGULATED HERNIA.

The reader of current literature might fairly infer from the large number of successful cases reported, in which strangulation of the gut requires for its complete relief resection of at times many feet of the bowel, that operations for this condition have been rendered by modern methods a comparatively safe procedure. To every surgeon of large experience it is still recognized as an accident attended by a very large mortality, even when it is promptly diagnosticated and immediately operated upon. In this relation a communication by Barker in the *Lancet* of May 30 is extremely interesting, based as it is upon 406 successful cases of strangulated hernia admitted to the same institution. He notes that in spite of all our improvement in surgical procedure there is a gross mortality in the operative cases of 31.2 per cent. This in spite of the fact that cases are submitted to operation with less hesitation and therefore earlier than formerly.

Heavy though this mortality be, it affords a marked contrast to the mortality of 50 per cent which obtained at an earlier period, when patients were subjected to long delay before resorting to the knife, and the condition often being aggravated by taxis.

The persistent high mortality Barker attributes to the fact that operation is even yet not sufficiently timely. This is shown by the fact that many cases operated upon are in such a condition that no surgical procedure other than the formation of an

artificial anus can be seriously considered. Moreover, a study of the post-mortem records shows that the fatal cases have exhibited either perforation or general peritonitis spreading from the reduced gut, while a few cases died from shock and lung complications. Of 114 cases in which the cause of death is noted, sloughing of the gut with peritonitis accounted for at least 55, and indeed about 100 died from trouble depending on the state of the bowel returned. In other words, if it would have been possible to treat these cases without returning the gut, there would probably have been a much lower death-rate.

The unavoidable conclusion from this study is that the damaged gut should not be returned within the abdomen in bad cases. Apparently the easiest way of accomplishing this is the formation of an artificial anus, but the statistical study indicates that in only two cases was the formation of an artificial anus successful in averting death; hence but little can be hoped for from this procedure. There remains enterectomy. In the last four years there were seven cases of primary enterectomy with four deaths. Because of the enterectomy performed, Barker records the fact that the mortality in his series of cases for the last four years has been reduced to 18 per cent.

This paper of Barker's derives its main importance from the fact that he has seen a large number of cases of strangulated hernia treated in the same institution. It denotes a progressive reduction in mortality, but proves that the death-rate is still far beyond that which could properly be expected provided the conditions were favorable for operation. It demonstrates beyond peradventure the danger of delaying operation in cases of strangulated hernia. It incidentally shows that except immediately after strangulation, attempts at taxis are inadvisable. It proves that the time factor is not the only one to consider in estimating the amount of damage done to the gut, but that a very few hours may suffice for an absolute and complete strangulation. It shows that constitutional symptoms do not go hand in hand with the amount of devitalization. It leads to the inference that the only treatment to be seriously considered in cases of strangulation is immediate operation with resection of the gut, if there be any serious question of its vitality, and end-to-end anastomosis, a procedure which one versed in the method may carry out in fifteen or twenty minutes with full assurances as to success. Incidentally it demonstrates the importance of radical operations upon hernias of childhood.

Reports on Therapeutic Progress

THE DIETETIC TREATMENT OF PULMONARY TUBERCULOSIS.

GALBRAITH under this title discusses in the *British Medical Journal* of March 14, 1903, the good effects of diet upon pulmonary tuberculosis. He asserts that one advantage of a meat diet, in addition to its directly curative value, is that it supplies organically combined iron, and renders the administration of other organic hematinics unnecessary. The percentage of hemoglobin rapidly rises from 50 or 60 to 100 or 130, according to sex. This must considerably facilitate gaseous interchange, and thereby lessen the work of both heart and lungs, thus helping to bring about a state approximating to the ideal physiological rest, which is unattainable in a vital organ.

From a histopathological point of view, rational dieting consists, not in indiscriminate stuffing, nor in indiscriminate lessening of the food, but in furnishing a diet rich in the appropriate albuminous constituents. The diet in tuberculosis is to be regarded as possessing a directly curative value, and its chemical composition is of as paramount importance as the constitution of the active principles of any mixture, however indifferent may be that of the vehicle. The special advantage of a meat diet in this relation is that, besides containing the nuclear bodies which have a directly stimulant action, it contains also proteids which have a high nutrient value. Sufficient fat and carbohydrate must be given to meet the physiological needs, and increased later, as metabolism and absorption improve, to the maximum which can be elaborated.

Such a diet supplies ready made, unless destroyed in the cooking, the materials for

rebuilding the muscular system. Malnutrition and degeneration, the direct results of toxic poisoning, involve the heart as well as the skeletal muscles. In helping to rebuild the muscles we directly contribute to the maintenance of that organ on the efficiency of which the fate of the patient depends. Circulatory disturbance is one of the first signs of tuberculosis, and as the disease progresses the state of the pulse becomes of increasing prognostic value. A change in the character of the pulse-beat is the first evident sign of a satisfactory reaction. As Dr. R. W. Philip has pointed out, the reaction to the treatment as evidenced by an improvement in the circulation and temperature precedes the establishment of a satisfactory lung condition. "Within a day or two . . . and with few exceptions within a week or two, the rapid, soft pulse is replaced by a slowed and comparatively resistant beat. I regard the less or greater degree to which this is established as immediately of great prognostic value." The improvement, in fact, is an immediate result of the treatment and not the remote effect of a diminished activity of the local lesion. It accompanies the increase in weight, and is capable of the same explanation as that offered above.

A meat diet supplies a direct physiological want. Fat and carbohydrate are known clinically to be more or less interchangeable, an excess of the latter causing an increased formation of the former. Nitrogenous food is also convertible in the one direction, but with difficulty, while no excess of any other constituent can furnish organic nitrogen. In tuberculosis it is doubtless true that there is a wasting of subcutaneous fat, but the main feature is a waste of the nitrogenous element of muscle. A great part of the remaining tissue forming the muscular masses is changed into fat, while there is extensive storage of fat in the viscera. What the exact factor is which produces this change need not be discussed, but the important point is that in the body of a patient there is a diminution of the nitrogenous element, both relative and absolute, out of all proportion to the diminution in the other elements; it is true that fat in certain localities is diminished, but there exists a vast store which would be drawn upon were it the physiological item that is wanting. It is no wonder that the breathlessness of the overfed, or rather the improperly overfed, consumptive has become proverbial, and that his metabolism suffers. Even with an enormous diet of the "suet pudding" variety, his tissues may be suffering from proteid starvation, seeing that he has to replace so great a quantity of muscle substance. The restoration of muscle, as indicated by the improvement in the circulatory condition and increase in weight, causes no dyspnea, even when the meat diet is pushed to its extreme limit. Dyspnea, on the contrary, diminishes with the elimination of the fatty element from the heart and muscles.

UPON THE LOCAL USE OF COCAINE IN THE NOSE.

HARLAND states in the *Philadelphia Medical Journal* of May 23, 1903, his views in regard to this important practical subject. The objections he considers are as follows:

The cocaine habit is too well known to need any extended mention here. It is readily acquired, is terrible in its results, and is practically incurable. No physician should ever give cocaine in any form into the hands of his patient for the relief of nose or throat symptoms, unless the patient is in the last stages of tuberculosis or similar painful and hopeless disease; it is even wise not to inform patients when cocaine is applied. One views with horror and alarm the careless way in which prescriptions for cocaine snuffs and sprays are recommended for hay-fever and even for simple colds in the head.

Secondary Congestion and Hemorrhage.—Applied to the mucous membrane of the nose, cocaine produces not only a local anesthesia, but also a local anemia. The latter is due (according to Wood) to the action upon the constrictor nerves and unstriped muscles of the arteries and veins. After an hour or two this ischemia is often followed by a marked congestion, usually in proportion to the amount of the previous constriction, and hemorrhage occurs if the mucous membrane has been broken. The reason why the congestion

takes place has not been discovered. Bosworth taught that the blood-vessels are less dilated after cocainization is past than they were before, but the opposite view is the one now generally held. Troublesome secondary congestion can usually be avoided by restricting the strength and amount of the cocaine solution used. Hemorrhage, if it occurs, will of course be in proportion to the amount of congestion present. Iodoform gauze or similar packing makes a satisfactory guard against this important complication.

Local Subjective Sensations.—In some persons a sensation of constriction and strangulation is induced if even a small amount of cocaine reaches the rhinopharynx and pharynx. As absorption takes place slowly in these localities, the paresthesia is more disagreeable than dangerous, and can be ignored if the solution is applied only when it is needed.

Just how cocaine produces the alarming faintness and other symptoms which sometimes arise, symptoms that have been ascribed to a peculiar idiosyncrasy of the person affected, has not as yet been explained. Probably, as the weak pulse, pallid lips, and cold, clammy skin indicate, it is due, as Reichert suggests, to an overdose of cocaine paralyzing directly through the circulation of the intrinsic nerve apparatus of the heart. This effect is instant and profound. Syncope and convulsions may also occur from anemia of the nerve centers. Randall recorded some years ago a case of cocaine poisoning that occurred in a child six years of age. He estimated that one-fifth of a grain was the maximum that could have been absorbed, about five minims of the four-per-cent solution having been applied to the turbinated bodies with the applicator. Shortly afterwards the child became weak and fainted. When seen half an hour later the patient was delirious and very restless, the pupils were dilated, the face flushed and dry; temperature, pulse and respiration were not affected. Within twenty-four hours the child was well. This case was unusual, because it occurred in a child, children being seldom affected by cocaine applied locally in the nose, and because of the symptoms that followed syncope, which were more like the symptoms of general cocaine poisoning. In the typical adult case the patient suddenly feels weak and faints, the pupils become dilated, the lips and face pale, the muscles rigid, convulsive movements of the arms and legs may occur, and then, in the course of a few minutes, recovery ensues, general weakness being the only after-effect.

Various explanations can be advanced to account for this apparent susceptibility to cocaine. Ball believes that accidents from cocaine result from its use in spray form. The lining membrane of the nose presents a broad vascular surface making absorption rapid, and when a spray is used, hard to measure and regulate; nevertheless, although toxic symptoms are readily produced when the spray is carelessly used, the symptoms sometimes occur when the drug has not been applied in this way. In a person weakened by age or illness, and whose circulation is poor, absorption may take place so slowly as to tempt the operator to deluge the tissue in order to hasten the local relief. In such a case, after absorption is completed, poisoning may be expected to occur. One can readily realize that the solution applied to a greatly distended turbinated body will soon find its way into the large venous sinuses of the nasal mucous membrane of this part, and when the constricting action is at last produced, solution and blood will be at once thrown into the circulation and quickly reach the heart. In persons of nervous and sanguine temperament, with especially vulnerable nerve tissue and with an active capillary circulation, less amounts are required to bring about therapeutic and toxic results. Such a condition of the circulation and nervous system is produced by the exhibition of alcohol, which explains the unfortunate results that occasionally follow the application of cocaine to patients who have taken whiskey to fortify themselves for an operation. In the weak, old, and nervous, therefore, cocaine must be used with caution.

It will not do to overlook the fact that occasionally syncope will occur when cocaine has not been used at all. Weak, nervous persons may collapse from sheer apprehension, and as is well known, stout, hardy men sometimes faint at the sight of blood or while being vaccinated. Differentiation as to the cause of the symptoms, therefore, is not always easy, and no doubt

toxic effects arise usually from a combination of causes; but a sufficient number of cases is found in which faintness occurs when ordinary applications of cocaine solutions are made, and do not occur when cocaine is omitted from the solution applied—enough cases to justify the belief that in them certainly cocaine alone is responsible for the ill effects.

Adrenalin chloride has proved a most valuable aid in lessening the dangers and in enhancing the powers of cocaine. In hay-fever and like congestions it may be used as spray in the strength of 1 to 10,000, or in these and in other cases be applied locally in the strength of 1 to 4000. Both cocaine and adrenalin act slowly, and therefore one-half to three minutes should be allowed to elapse between the applications. Schleich's solution, instead of cocaine, may be injected before such operation as that of resection of the columnar cartilage.

In closing, it may be said that clinical experience warrants the belief that cocaine in spray form can safely be employed if limited to a few gentle puffs of a one-per-cent aqueous solution. If used on the cotton-tipped applicator, a five-per-cent solution should be the maximum strength employed. It should be applied carefully and accurately, half a minute at least allowed between the applications, and the tissues should be repeatedly inspected, touched, and tested, so that no more cocaine than is necessary shall be applied. Adrenalin chloride solution should be employed to aid in bringing about the effects desired. If due attention is paid to these directions, no one need fear any untoward result from the local use of cocaine.

ADRENALIN IN HEMATEMESIS.

To the *British Medical Journal* of March 28, 1903, MILLS reports his experience with adrenalin in the following words, believing that this preparation is a very useful addition to our Pharmacopœia:

In two cases of hemorrhage from the stomach it has been singularly successful; in both the dose was 25 minims of Parke, Davis & Co.'s solution of adrenalin chloride 1 in 1000.

The first case was that of a woman of sixty-eight with symptoms pointing to malignant ulceration. It was given in 90 minims of water; vomiting and hemorrhage stopped after the first dose—only two were given. There has been no more hemorrhage or vomiting for the last eight weeks.

The other case was one of simple ulceration in a woman aged thirty-one. In this case it was given in half an ounce of water, but there was no more hematemesis or vomiting. It was continued for six doses, as the hemorrhage had been profuse and persistent.

THE CAUSES AND PREVENTION OF DEATH FROM CHLOROFORM.

In the *Australasian Medical Gazette* of April 20, 1903, VANCE states that the chest can be slapped with a wet towel, or ether can be poured on to get the effect of cold. These remedies are, however, poor compared with artificial respiration. This must be commenced at once, no matter whether the respiration or heart be at fault. It is the most valuable means of restoring cases of chloroform poisoning. The value of artificial respiration lies, in a great measure, in its effect as a mechanical cardiac stimulant and restorer of blood-pressure. If it is to be effectual, it must be so done that compression is made on the chest. The results of artificial respiration in the operating theater and laboratory are widely different; the poor results obtained in the theater being due, as a rule, to the very different manner in which it is carried out. In the laboratory, on the other hand, the means adopted are of the best. This has been so long recognized that John Hunter invented an apparatus for carrying it out in man. Fell, of Buffalo, has also a valuable but complicated apparatus. A simple, yet efficacious, means of performing forced respiration, as it is called, has been recommended by Wood, of the University of Pennsylvania. It consists simply of a pair of bellows, two intubation tubes, and some rubber tubing. In using this apparatus it is advisable that compression be made at regular intervals on the chest. Should the indications point rather to heart failure (in addition to artificial respiration) the body should be laid at an angle of 45 degrees, with the head downward; the best results being probably ob-

tained by alternately raising and lowering the legs.

Wood has pointed out that the good results due to inversion of the body arose from the increased intracardiac pressure, which in some cases is sufficient to restimulate the heart. In other cases this method absolutely fails. It should, however, be always given a fair trial.

Prus's method of cardiac massage, which has successfully restored dogs, has been tried by Freyberger, with the results that the patient lived for three hours. If all other measures fail it is worth a trial. Galvanism has been resorted to. No good results, however, have followed its use. The commonest drugs which are used in threatened death are ether, alcohol, ammonia, amyl nitrite, digitalis, atropine, strychnine, caffeine, etc.

Ether: Hypodermically it may possibly be of some value as a cardiac stimulant in chloroform poisoning, but the author does not recommend it, as he has failed to see good results follow its use.

Alcohol: When we remember that alcoholics are bad subjects for anesthetics, requiring a large amount of chloroform, and go under very suddenly, it seems rather a contraindication to give alcohol to stimulate a heart depressed by the anesthetic. Dubois found that animals to whom alcohol had been freely given required much less chloroform to anesthetize and kill than those none had been given to—*i.e.*, alcohol intensified the action of chloroform, and lessened the fatal dose. These experiments were subsequently confirmed by Wood. For these reasons alcohol cannot be recommended for threatened heart failure due to chloroform. It may be of use in the failure due to loss of blood. As a general rule, however, it will be found that saline transfusion and ether will give better results in this condition.

Ammonia: Very uncertain in its action; of great benefit in some cases, and fails utterly in others. It is well, however, to give it a trial; from 20 to 30 minims of the spirits of ammonia being injected hypodermically.

Digitalis: Of undoubted value. It causes a persistent gradual rise in arterial pressure, with an increase in the size of the individual pulse beat.

Amyl nitrite: Although this drug bears the best of recommendations, the author has never seen the slightest benefit follow its use. Owing to its volatility, unless the mouth and nose be more or less covered by a towel or other means, it all escapes into the air. Should the towel be used we are impeding free entrance of air, which is of the most extreme value. Wood found he could get no rise of arterial pressure, and only occasionally an increased pulse wave, in his experiments. These experiments have subsequently been confirmed by other investigators. Dudley Buxton writes that amyl nitrite is not a true physiological antagonist to chloroform, for it lowers the blood-pressure by either paralyzing the muscular coats of the vessels or of the vasomotor ganglia controlling them. Further, it depresses the heart and respiratory center. If these views are correct, it is nothing more or less than suicidal to use amyl nitrite.

Strychnine: This is probably the most valuable of all drugs. Not only is the arterial pressure increased by its use, but the respirations become increased in depth and rate. To get the full benefit of the drug, however, it must be used in large doses. It is advisable to start with grain 1/20, followed if necessary in a short time by another grain 1/20. The author has used as much as grain 1/6 during the course of a long operation without any bad effects. It must be remembered that children are much more susceptible to its physiological action than adults. Accordingly the dose must be much smaller than the usual proportional dose.

Atropine: Valuable especially in the early stages where we have the vagus inhibition acting; about grain 1/80 should be given.

Extract of suprarenal capsule: Mankowski found that a one-per-cent solution stimulated the heart, respiration, and maintained the blood-pressure in his experiments on dogs. He recommends a trial in case of chloroform poisoning.

THE CURE OF NEURASTHENIA.

In the *British Medical Journal* of May 2, 1903, RANKIN states that in neurasthenia rest is the first and obvious indication, and it must always be both mental

and physical. Its power for good is intensified by the moral effect exercised on the patient by his physician and his surroundings. His enfeebled will-power is keenly susceptible to the influence of his environment, and in the seclusion of a nursing home the medical attendant has great opportunities for diverting his patient's mind from its usually gloomy and introspective imaginings by judicious management and by recourse to the various hygienic and therapeutic measures which are calculated to restore his energies and lost courage. In mild cases the requisite amount of variety and rest may be got from a sea voyage, a trip abroad, or a change of scene and surroundings at home; but no routine method is universally applicable, and it often happens that the breakdown has gone too far to leave sufficient energy for the enjoyment of either travel or recreation. Under such circumstances, a course of Weir Mitchell treatment will yield the best results. The essentials of this method are continuous rest, enforced feeding, and massage, and these require to be maintained over a period of six or eight weeks if a permanent benefit is to be achieved.

Electricity is often of signal service as an addition to the other details of a rest cure. Its success is perhaps mostly due to its suggestive influence on the patient's mind, but it also undoubtedly promotes metabolism, stimulates muscular activity, and exerts a soothing and pleasant influence on the nervous system.

When the rest cure is finished, the improvement gained will be made more lasting if the patient pays a short visit to the country, seaside, or a suitable spa before reëntering the field of his daily labor. Though drugs play a secondary part, they ought not to be wholly neglected. When there is much restlessness, and particularly when the sleep at night is broken, the bromides in suitable doses will be found of advantage. It is often a successful plan to order one or other of them in combination with arsenic or strychnine during the day, and should insomnia still persist, to provide for it separately by 20 grains of sulphonal, trional, or chloralamide, or 5 grains of chloralose at bedtime. As soon as the sleep habit has been reestablished the hypnotic should be dropped, and on disappearance of the restlessness the bromides also may be withdrawn.

When the simple hypnotics fail to induce refreshing sleep the question of the eligibility of narcotics arises. Much has been written against the use of morphine, on account of the risk of creating an unconquerable habit, but if care is taken not to extend its employment beyond the immediate necessities of the case, it will be found that a few small doses, given hypodermically on successive nights, will have the desired effect without the least subsequent risk of habitual dependence on its influence. If anemia is present iron in one of its milder preparations should be administered; and when vasomotor instability is a prominent symptom, there is no drug which exerts a better steadying influence on the circulation than ichthyol. It may be given in doses of from 5 to 10 grains, and is often usefully combined with cannabis indica and one or other of the nerve tonics. A combination of 5 grains of ichthyol, 5 grains of reduced iron, 1/40 grain of arsenous acid, and 1/3 grain of extract of cannabis indica will be found to meet successfully the requirements of a large proportion of cases. As soon as the digestion is strong enough to deal with it, cod-liver oil should be added to the daily regimen. It is best given in one dose of half an ounce at bedtime, and it may be advantageously combined with a like quantity of malt.

The bowels must be carefully regulated by a simple aperient, if such be required, and the activity of the liver will be promoted by an occasional dose of calomel or blue pill. When there is much discomfort from flatulence valerian fulfils a useful rôle; its nauseous taste may best be obviated by choosing the zinc salt and giving it in the form of a pill or capsule. If headaches are severe and persistent they will be relieved by the exhibition of one of the numerous analgesics so much in vogue nowadays. The most dependable is probably acetanilid, which should be ordered in doses of not less than five grains. Alcohol must always be used sparingly, if at all. A tumblerful of well matured stout taken with luncheon is often enjoyed, but in many cases a light Burgundy or claret is preferred, and agrees better. In traumatic cases, if there is much complaint of spinal tenderness, the use of a

Paquelin cautery often affords marked relief to the pain.

Measures of prophylaxis ought not to be neglected. Children born of neuropathic parents should be safeguarded from the risks of their heredity by strengthening, as far as possible, the energy and resistance of their nervous centers. This can best be done by employing every hygienic means during their developmental period, to insure such a physical and moral education as shall substitute an acquired stable individual habit for an inborn unstable tendency without risk of overpressure. An adult who has once suffered from neurasthenia may do much to lessen the risk of recurrent attacks by careful regulation of his daily habits of life.

He must arrange his work so as to avoid undue fatigue. He should have long nights in bed, observe regularity in regard to his meals and exercise, and make a point of seeking periodically a short respite from the daily routine of duty by a change of scene and surroundings. He ought to decline all responsibilities involving prolonged worry or anxiety, and every slight ailment should be treated with more than ordinary care, so as to lessen the risk of strain on his nervous system.

INTESTINAL INDIGESTION.

The *Medical News* of April 18, 1903, contains an article by HEMMETER, who states that in his experience it is impossible to succeed with a radical enforcing of strict diet of any kind, but it is wise to recommend what is known as a bland diet; above all things, to study the stools, if possible by the microscope and stool-sieve, in order to discover what foods pass the intestinal tract undigested. These must thereupon be avoided, or given in so finely divided a state and in such small quantities that their digestion becomes easier. It is also of importance to utilize the observations which the patients have made upon themselves with regard to the diet. They frequently know what causes distress and what can be digested. The stool examination, however, will guard against deception. The author makes it a rule to forbid alcohol, tea, coffee, and tobacco to these patients. In great exhaustion he allows small quantities of a superior wine or whiskey, under strictest control. In some patients a diet rich in carbohydrates, in others one rich in proteids (beef, fowl, fish), is well digested. In fact the diet to be followed cannot be decided until a dietetic experiment is made. The same holds good with regard to the treatment of the constipation. Here the practitioner will have to decide whether this is due to atony or spasm of the intestinal musculature, for what will benefit one condition will harm the other. Here also, in most cases, a therapeutic experiment will be necessary before we can discover whether we are confronted with atony or spasm. The majority of these patients require exercise after meals. A few that are weak may require rest in bed. Especial attention must be paid in the selection of the food for the last meal of the day. Great moderation in the amount eaten and the digestibility are the most important points to bear in mind. A heavy supper will often produce a restless night. The treatment of the general neurasthenia will be that by electricity, hydrotherapy, massage, and baths. Insomnia demands attention, and often yields to efforts directed to cleaning the colon and stomach. Hypnotics must be avoided as long as possible.

Whenever a dystrypsia has existed for a considerable time on a purely functional basis, it may eventuate in a disease with definite anatomical alterations. One of the most common symptoms is augmented intestinal peristalsis as a result of irritation by fermentative masses. A condition results in which the contents of the upper part of the bowel are hurried through the entire intestine in an altered condition—*i.e.*, the stools may present the same properties as are characteristic of the contents of the jejunum, which are normally thick but liquid and gelatinous. When there is excessive bacterial activity, the various intestinal antiseptics have been advocated. The author has been able to get along without them in the great majority of cases. He has seen very grave results follow the administration of the irritant antiseptics. Perhaps the most available are bismuth salicylate and sub-

gallate, betanaphthol bismuth, thymol, menthol, resorcin, and salol. Creosote, even in small doses, has in the author's experience deranged the stomach in sufferers from intestinal dyspepsia. In cases in which the gastric secretion of HCl was suppressed, he made a trial with the orexin so strongly recommended by Penzoldt, and noted in three cases an irritative diarrhea, which became manifest after the first two doses, and ceased when the remedy was discontinued.

The following formulas have been used in a large number of cases by the author for the special symptoms of intestinal dyspepsia. The first one has proved useful in the putrefactive diarrheas, especially when associated with abdominal pain:

Tannigen, 4.00 Gm. (1 drachm);
Bismuth subgallate, 8.00 Gm. (2 drachms);
Salol, 1.55 Gm. (24 grains);
Denarcotized extract of opium, 0.20 Gm. (3 grains).

This can be either made into twelve capsules or prescribed with six ounces of some elixir, of which the author prefers the elixir of gentian and the essence of calisaya (P., D. & Co.), three ounces of each, in doses of a tablespoonful three or four times a day.

The author's favorite recipe for anorexia from gastric hypochylia in intestinal dyspepsia is the following:

Strychnine sulph., 0.02 Gm. (⅓ grain);
Dil. hydrochloric acid, 15.00 Gm. (½ ounce);
Fluid ext. condurango, 45.00 Gm. (1½ ounces);
Elixir of gentian, 180.00 Gm. (6 ounces).

One-half of a fluidounce in two ounces of water, one-half hour before meals, through a glass tube.

The dilute HCl cannot be given in sufficiently large quantity to completely replace the normal secretion if this is absent entirely. Its function is merely that of a gastric and pancreatic stimulant in these doses.

Or,

Tinct. of nux vomica, 9.30 Gm. (2½ drachms);
Essentiæ calisayæ (P., D. & Co.), 60.00 Gm. (2 ounces);
Elixir of gentian, 180.00 Gm. (6 ounces).

One-half of a fluidounce thrice daily, one-half hour before meals.

When there are evidences of anemia with the gastric hypochylia, the following acts satisfactorily:

Quinine sulphate, 1.16 Gm. (18 grains);
Strychnine sulphate, 0.02 Gm. (⅓ grain);
Sulphate of iron, 0.80 Gm. (12 grains);
Arsenous acid, 0.012 Gm. (1/5 grain).

Make into twelve pills. One pill three times daily. They must be prepared fresh and not coated.

Boas uses the following powder for anorexia:

Ext. of nux vomica, 0.024 Gm. (2/5 grain);
Bismuth subcarbonate, 0.520 Gm. (8 grains).

Make twenty powders. One powder three times daily.

Menche has warmly recommended resorcin sublimate, and it undeniably improves the appetite in cases of incipient gastric and intestinal fermentation. It has also a slight sedative action. The following is Menche's formula:

Resorcin resublimate, 2 Gm. (30 grains);
Tinct. of rhubarb, 15 Cc. (½ ounce);
Simple elixir, enough to make 90 Cc. (3 ounces).

A tablespoonful twice daily.

Resorcin can also be advantageously combined with bismuth salicylate, salol, and betanaphthol in the following manner:

Resorcin resublimate, 5 Gm. (75 grains);
Bismuth salicylate,
Powdered rhubarb,
Sodium sulphate, of each 10 Gm. (150 grains);
Milk-sugar, 15 Gm. (225 grains).

An even teaspoonful twice to three times daily.

If dyspeptic diarrhea is present the rhubarb and sodium sulphate must be replaced by calcium phosphate and calcium carbonate, of each 25 grammes.

The following formulas are recommended by Ewald for anorexia with fermentation:

Tinct. of nux vomica, 22.56 Gm. (6 drachms);
Resorcin resublimate, 5.40 Gm. (83 grains);
Tinct. amara, 11.25 Gm. (3 drachms).

Take ten to fifteen drops every two hours.

Fluid ext. condurango, 17.00 Gm. (4½ drachms);
Resorcin resublimate, 4.00 Gm. (1 drachm).

Thirty drops four times daily.

In all cases of intestinal dyspepsia the aim must be to understand the cause and remove it. Not to give medicines except as an *ultima ratio*.

THE USES OF SUPRARENAL EXTRACT IN NOSE AND THROAT DISEASES.

DOUGLASS writing in the *New York Medical Journal* of May 2, 1903, tells us that in his own work he has noticed, after the use of this drug, some patients exhibit an unusual dryness of the nose and throat, sometimes lasting for twenty-four hours. This is so marked in some cases that water has been snuffed into the nostril to relieve the lack of sensation. He has noticed this when the suprarenal has been used freely, and also when only a small quantity has been applied. In other cases he has noticed a change in quantity of the nasal secretion. A coryzal discharge has been almost immediately checked, and some hours later a small quantity of purulent, tenacious mucus has been secreted, causing persistent blocking of the inferior meatus. Another local effect of suprarenal has been a sensation of shrinking of the nasal mucous membrane so that it would seem as if the membrane were tightly drawn over the bone, and the patient has complained of the unpleasant feeling. Sometimes the coryzal discharge has been aggravated by the use of suprarenal solution. In certain patients the use of any preparation of suprarenal produces such a sensation of tickling in the nose, accompanied by sneezing, that they have requested discontinuance of this form of treatment.

In no instance is the author referring to hay-fever cases, but to ordinary acute rhinitis and chronic catarrhal rhinitis. It remains as a fixed impression in his mind that, notwithstanding the introduction of more careful antisepsis together with greater familiarity with the work, the patients the author has operated on for exostoses do not heal so readily as in the days when suprarenal was not in vogue. The only reason given for such an impression is that there is a more lasting effect on the intranasal mucous membrane than is at first apparent, and that a certain amount of interference with nutrition accompanies the use of suprarenal; or it may be that the protoplasmic activity of the cells is in some way influenced.

In some patients suffering from acute catarrhal inflammation of the accessory sinuses, particularly of the frontal sinus and ethmoid cells, the author has noticed that the use of suprarenal to relieve the congestion has resulted in increased congestion of the ethmoid and frontal regions. It is a matter of regular notice that in these cases the symptoms are aggravated by suprarenal. Unpleasant constitutional symptoms have occurred in a few cases. It is not infrequent that patients upon whom suprarenal has been used suffer from an aching in the neck and a sensation in the pit of the stomach in the region of the solar plexus. A certain amount of headache and fulness in the head has been noticed. Another patient under the author's care regularly developed hiccough when suprarenal was used upon the nose. Finally it may be said that suprarenal does not act well in all cases of hay-fever. Since its introduction it has been extensively used in this disease, both in this country and in Europe, and it is still, the author believes, one of the most valuable remedies for this condition. Nevertheless, the remedy is not of use in all cases, and the position taken by the author in a paper entitled "Treatment of Hay-fever by Suprarenal Gland" has been sustained by later experience. He has not found it necessary to change his views that in those cases of hay-fever in which the nasal symptoms are prominent, particularly when accompanied by much congestion, the benefit from the use of suprarenal is most marked. In nasal cases not accompanied by much congestion the benefit is lessened, and in those with perennial nasal attacks there is less relief from the drug than in simple congested cases. Cases dependent on gouty or rheumatic diathesis are helped by the use of suprarenal, while on the other hand patients are not helped where there is loss of blood-vessel elasticity, due to atheroma or to those conditions of the blood-vessels resulting from cardiac disease. Cases with degeneration of the cardiac muscle are also hopeless of relief from suprarenal.

Another use of suprarenal is as an aid to diagnosis. In differentiating the local-

ities within the nose which are purely congested from those where the tissue is hypertrophied, suprarenal, by reducing the congestion, leaves a more perfect picture of the nose for the rhinologist, and with the use of the probe it also serves to indicate the merely congested tissue as distinct from the hypertrophic, and to differentiate hypertrophied mucous membrane from hypertrophied mucous membrane plus bony lesions. Simple hypertrophy is indicated by whitened, flabby tissue moving readily under the probe. By shrinking up the blood-vessels of the nose more space is obtained, and a better view of the parts for operation.

In operations upon adenoid tissue and upon tonsillar tissue the writer has found that suprarenal gland, either injected or applied as before stated, is not particularly serviceable. In operations upon the larynx in tuberculous cases it diminishes hemorrhage, and not only facilitates operation, but allows the operator to continue the operation past the time usually employed in laryngeal work. In cases of hemorrhage which are non-operative, such, for example, as simple hemorrhage from the septum, a pledget of cotton dipped in suprarenal and pressed against the bleeding point acts favorably, both as a local astringent and as a means of pressure. It also has advantages over cauterants in not producing lesions of the mucous membrane.

In hemorrhage after amygdalotomy and adenotomy, hydrogen peroxide solutions, in the author's experience, have worked better than the suprarenal. In non-operative hemorrhage from the larynx suprarenal gland is of use.

Drainage through the accessory sinuses of the nose in antrum or frontal sinus disease, or ethmoiditis, is facilitated by the use of suprarenal gland applied in the regions of the anatomical openings of the accessory sinuses. In acute abscess of the frontal sinus, for instance, the cavity may be perfectly drained and the danger of threatened empyema obviated by the free application to the region of the middle turbinate and the hiatus semilunaris of a strong solution of cocaine and suprarenal. Drainage may be further facilitated subsequently by irrigation of the nostril, the suction serving to drain completely the accessory sinuses.

In acute inflammatory conditions of the nose, pharynx, and larynx, suprarenal is one of our most brilliant remedies. In fresh colds, for instance, it may be applied, with the result of diminishing the secretion, reducing the congestion, and restoring the breathing space. It may also be given freely without danger of forming a habit, as the slight nauseating effects prevent its too frequent use. Therefore, in acute catarrhal conditions of the respiratory tract, where there is much congestion, soreness, and the general accompanying symptoms of this condition, suprarenal gland is of great use. Here it should be used, not only locally, but also internally, either alone or in combination with other remedies, for the purpose of combating constitutional symptoms. It may be given with phenacetine, Dover's powder, quinine, and aconite, and should be taken each hour until the effect is produced, after which every two or three hours will maintain the condition which has been established. Used in this way, Douglass finds this is a most valuable addition to our pharmacopœia in the treatment of acute catarrhal laryngitis, hay-fever, hay-asthma, coryza, conditions of relaxation of the erectile tissue of the turbinates, chronic nasal congestion, and in some cases it seems to modify the quantity and quality of nasal discharge.

Amongst diseases of the pharynx it is useful in acute catarrhal pharyngitis, in inflammations of the soft and hard palates, circumtonsillar inflammation, rheumatic and follicular amygdalitis, and chronic congestion of the tonsil. In the larynx it is a most valuable remedy for singers and speakers, in conjunction with other remedies, for the relief of hoarseness proceeding from incorrect use of the voice; for singers in chronic congestion of the larynx; and in forms of acute laryngitis in which hoarseness, croupy breathing, and a certain amount of dyspnea are symptoms. It does not seem to be of any particular use in chronic laryngitis or in tuberculous or syphilitic laryngitis. One very great use should be mentioned, and that is in new growths. Most malignant growths are

abundantly supplied with blood-vessels, and considerable diminution in the size of the growth may be obtained by the use of suprarenal, locally or by injection into the tumor. The author has found this useful in one case of nasal sarcoma and in malignant growths, either sarcomatous or epitheliomatous, which produced obstruction to nasal or laryngeal respiration. In these cases the patients have obtained a considerable degree of comfort in respiration from the contractile effect of suprarenal upon the blood-vessels of the growths. Of course, this is only temporary and must be repeated.

It remains only to state that the single contraindication to the use of suprarenal is in atrophic cases of the nose, larynx, or pharynx. A word of warning is needed as to the theoretical possibility of atrophy or atrophic conditions, developing from the too frequent and prolonged use of this most admirable of remedies.

THE GERMICIDAL VALUE OF ALCOHOL.

In the *Boston Medical and Surgical Journal* of May 21, 1903, HARRINGTON and WALKER reach these conclusions as the result of a research:

1. Against dry bacteria, absolute alcohol and ordinary commercial alcohol are wholly devoid of bactericidal power, even with twenty-four hours' direct contact, and other preparations of alcohol containing more than 70 per cent by volume are weak in this regard, according to their content of alcohol—the stronger in alcohol, the weaker in action.

2. Against the commoner, non-sporing, pathogenic bacteria in a moist condition, any strength of alcohol above 40 per cent by volume is effective within five minutes, and certain preparations within one minute.

3. Alcohol of less than 40-per-cent strength is too slow in action or too uncertain in results against pathogenic bacteria, whether moist or dry.

4. The most effective dilutions of alcohol against the strongly resistant (non-sporing) bacteria, such as the pus organisms, in the dry state, are those containing from 60 to 70 per cent by volume, which strengths are equally efficient against the same organisms in a moist condition.

5. Unless the bacterial envelope contains a certain amount of moisture, it is impervious to strong alcohol; but dried bacteria, when brought into contact with dilute alcohol, containing from 30 to 60 per cent of water by volume, will absorb the necessary amount of water therefrom very quickly, and then the alcohol itself can reach the cell protoplasm and destroy it.

6. The stronger preparations of alcohol possess no advantage over 60- to 70-per-cent preparations, even when the bacteria are moist; therefore, and since they are inert against dry bacteria, they should not be employed at all as a means of securing an aseptic condition of the skin.

7. Provided the skin bacteria in the deeper parts can be brought into contact with disinfectants, alcohol of 60- to 70-per-cent strength may be depended upon usually, but not always, to destroy them within five minutes.

THE TREATMENT OF THE ACUTE DIARRHEAS OF INFANCY.

MORSE, of Boston, in *American Medicine* of May 2, 1903, states that there seems to be a very general feeling that milk in any form is unsuitable in these cases on the ground that the pathogenic microörganisms are usually originally introduced in milk and therefore should thrive better in it than in any other medium. This argument hardly seems sound, however. The bacteria enter the milk simply because milk is the baby's food, not because it is the best culture medium. No one thinks of choosing milk as the medium on which to grow these same organisms in the laboratory; they choose rather preparations of meat or carbohydrates, the very materials from which the usual substitutes for milk in this disease are made. Clinically, nevertheless, these patients do seem to do better when they are fed for a time on something besides milk. There is much difference of opinion as to how long they should be kept off of milk. Some authorities think that a few days is all that is advisable, others that they should be kept off of milk until the stools are normal, no matter how long this may be. This latter position the

author considers a wrong one. It is almost always advisable to return to milk after a few days even if improvement has not been very marked, partly because the substitutes for milk are usually low in nutritive value, and partly because the change provides a different soil for the bacteria. Few realize how dilute most of the substitutes for milk are and how little food value they have. Barley water as usually prepared analyzes about .05 of 1 per cent of fat, .25 of 1 per cent of proteids, and 1.56 per cent of starch. Rice water and arrowroot water are little, if any, stronger. The white of one egg is only equal in nutritive value to two-thirds of one ounce of milk. Beef juice contains .6 of 1 per cent of fat and 2.9 per cent of proteids, giving a nutritive value, bulk for bulk, only one-quarter as great as milk. Broths contain only about one per cent of proteids, and hence have very little nutritive value. Therefore, the favorable results obtained from these substitutes for milk are to a certain extent due to the weakness of the foods. Milk preparations in a similarly dilute form will yield far different results from those obtained when they are given of the usual strengths. As already stated, however, there can be no doubt that these patients do better when milk is temporarily omitted.

Albumen water is best prepared by mixing the white of one egg with from four to eight ounces of water at a temperature of from 104° to 108° F. The egg should be mixed in carefully and not beaten. The shreds should be strained out.

Beef juice is prepared by half-broiling a piece of round steak. The steak is then cut into small pieces and the juice expressed with a beef or lemon squeezer. It is better taken if salted, and may be given undiluted or diluted with warm water.

Barley water is made by boiling two teaspoonfuls of barley flour in a pint of water for fifteen or twenty minutes. Water is then added until the amount of the mixture is again brought up to a pint. It is then strained through cheese-cloth.

It is often very difficult to determine in a given case which of these preparations to use. If there is evidence of acid fermentation, barley water and other cereal decoctions are contraindicated, while if there is evidence of albuminoid decomposition, broths, beef juice, and albumen water should not be given. It must also be remembered that the extractives in beef juice and broth stimulate peristalsis and tend to keep up the diarrhea. Somatose given in .65- or .97-gramme (10- or 15-grain) doses in water is often of service in those cases in which proteids are indicated. In those cases in which it is impossible to determine the nature of the pathologic process, and they make up the great majority, the cereal decoctions are more likely to agree than are preparations of animal proteids. In general, therefore, unless they are distinctly contraindicated, it is safer to begin with the cereal decoctions.

In beginning to feed with preparations of milk, whey is often most useful. It may be made from whole milk or skim milk. In either case it contains about one per cent of proteids and five per cent of sugar. When made from skim milk it contains almost no fat, while when made from whole milk it contains about one per cent. It is prepared by adding a teaspoonful of essence of pepsin or liquid rennet, or a junket tablet, to a pint of milk and heating it to from 100° to 110° F. until it coagulates. The mass is then broken up and strained through a napkin. If the patient is doing well the whey may be strengthened by the addition of small amounts of cream. If this is done the whey must be heated to 150° F., otherwise the ferment will make curds and whey of the cream also.

If whey is not used the infant should be given a modified milk prepared from fresh milk low in all percentages, highly alkaline, and pasteurized. It is better to give small amounts frequently than large at long intervals. Experience only can teach just what percentages should be given in individual cases, barring those cases in which there are definite indications of acid fermentation or albuminoid decomposition. In general, the percentage of sugar may be comparatively high, while that of the proteids must be comparatively low. The fundamental principle, however, is to give a dilute food. As the patient improves the percentages

may be increased, together or singly, and the intervals of feeding lengthened until the strength and intervals suitable for a normal infant of the given age are reached.

Breast feeding should not be forgotten in these cases. After the initial periods of starvation and abstinence from milk it will sometimes result in cure in cases which otherwise seem hopeless. In very critical cases breast milk may be given diluted with water.

As already stated, the first indication for treatment is to remove the cause. In this instance, however, the destruction of the cause involves the destruction of the patient. No germicides in doses large enough to be effectual can be used with safety. Drugs which limit to a certain extent the activity of the microörganisms can, nevertheless, be used to advantage. After a considerable and varied experience with many drugs, including some of the newer preparations, the author has discarded all but bismuth. This is best given as the subnitrate or subgallate. Either to be of much use must be given in considerable doses, not less than 4 to 8 grammes (1 or 2 drachms) in twenty-four hours. Unfortunately, it is difficult to induce a sick infant to take this amount. About as much can be given in the form of powder, mixed with water or milk, as in any other way. It is often given suspended in chalk mixture or simple mucilage. Any form of mucilage decomposes very rapidly in warm weather, and after it has been kept twenty-four hours every teaspoonful brings a large reënforcement to the enemy already present in the intestine. The subnitrate of bismuth may be safely given in suspension, however, in the following way:

> Ammoniocitrate of bismuth, 5 parts;
> Nitric acid, 30 drops;
> Water, 100 parts.

The subnitrate formed in this way will remain in suspension for several days. The objection to this preparation is the strong taste of nitric acid, and the small number of grains to the teaspoon. It is possible to give this, however, when the dry powder will not be taken.

Zinc sulphocarbolate in doses of .010 to .016 gramme (1-6 to 1-4 of a grain) seems to diminish the formation of gas and to improve the odor of the stools. Stimulation is necessary on the same indications and along the same lines as in other diseases. Alcohol is contraindicated if there is much irritability of the stomach.

ITCHING, AND ITS TREATMENT.

Bronson states in the *Medical News* of April 18, 1903, that one of the most valuable remedies for itching, perhaps the most generally serviceable of all the antipruritics, is menthol. It is not an anesthetic to the skin, but it relieves itching as it relieves pain by substituting for these sensations a disturbance of the temperature sense. It is the feeling of coldness produced by menthol applications to the skin that extinguishes the pruritic sensation even more effectually than does the feeling of smarting, This drug may be used in ointment or oil or in dusting powder, but is more effectual in alcoholic solutions of from two to four per cent. Dissolved in a little cologne water it seems even more efficacious, the cologne water itself having some antipruritic virtue. It may be used very freely if there is not too much inflammation, and it is a good plan, when itching is troublesome at night, to instruct the patient to take a bottle of it to bed with him, and to sop the solution on the moment any pruritus begins. To the menthol in the same preparation may be added thymol or chloroform. The last named combination is especially serviceable in urticaria.

Certain remedies relieve pruritus through a sedative action on the skin, including the cutaneous anesthetics. Hot water, when applied for a certain length of time, is decidedly sedative. Useful in many forms of pruritus, it is especially so in itching of the genitals and anus. Camphor combines with the revulsion action already alluded to a certain degree of sedation. In this connection also should be mentioned hydrocyanic acid and the cyanide of potassium, though they are remedies the author has rarely resorted to, nor has he found the local use of opium, belladonna, stramonium, or other

sedatives of the same class of much avail. It might be supposed that such a decided local anesthetic as cocaine would be of great value in pruritus; but on the intact epidermis it is inert, and the same is true of orthoform. It has its uses, particularly in pruritus affecting the lower mucous orifices, which will be referred to later on. Thymol is in some degree anesthetic to the skin, notwithstanding its first effect is irritant, and is especially useful in certain cases of severe and persistent itching; when added to the menthol preparations its anesthetic action supplements the peculiar action of the menthol. It is a good antiseptic also. Many of the antiseptics are antipruritic, and some of them cause more or less cutaneous anesthesia. Notably is this true of the mercuric chloride and of carbolic acid. It seems to be the property of such antiseptics to retard vital action, or by their further operations to destroy it entirely. It is perhaps by impeding the molecular movements in the excited nerves that they relieve pruritus. Concentrated solutions both of mercuric chloride and carbolic acid produce decided anesthesia of the skin.

Of all the local antipruritics, carbolic acid is the most reliable and has the most lasting effect. It may be used in alcoholic or aqueous solutions, in ointment or in oils. Though more or less efficacious in various strengths, to obtain its best effect it should be used strong. Its corrosive action on the skin is its chief objection, and it is well also before applying it over extensive areas to bear in mind the possibility of carbolic poisoning. This latter is not believed to be a very serious danger if ordinary caution is exercised. Though occasionally the author has observed smoky urine after a patient had used carbolic acid to excess, the symptom disappeared readily when the applications were stopped, and the harm done appeared insignificant. On the other hand, the author has repeatedly encountered cases where patients with severe and extensive pruritus had used strong solutions of carbolic acid freely for months, and with no discoverable untoward symptom as a consequence.

The danger of injury to the skin from the caustic action is a more imminent one, when very strong preparations of carbolic acid are used, and such strong preparations are often needed. This caustic action may be neutralized, as it is well known, by alcohol, so that over limited areas the pure acid may be applied if washed off with alcohol directly afterward. Generally a drying oil—linseed oil, more particularly—the author has found to be the best corrigent. The linseed oil, being a keratoplastic agent, serves to offset the keratolytic action of the acid. A little liquor potassa may be added with advantage for its anticatarrhal effect as well as because it emulsifies the oil, together with some essential oil to correct the odor. The following is the prescription:

> Liquor potassa, ℥j;
> Acid carbolic, ℥ij;
> Oil of linseed, q. s. ad ℥j;
> Oil of verbena, m ij.

Applied once a day, especially at night, when itching is always at its worst, this 25-per-cent solution will often give greater and more lasting relief to an intense pruritus than any other remedy. Oftener than once a day it should seldom be used, lest it prove too corrosive. This maximum strength is suited more particularly to limited areas of pruritus in which inflammation is not a prominent factor, but the same or a somewhat weaker preparation may sometimes be used to advantage and with safety for severe itching affecting the surface more generally.

RESULTS OF DECAPSULATION OF THE KIDNEY.

JOHNSON (*Annals of Surgery*, April, 1903) reports the results of a research undertaken by him for the purpose of studying the changes in the renal and perineal tissues of the dog following decapsulation of the kidney. The work was done in the anatomical and physiological laboratories of the University of California. Fifteen dogs, varying in weight from 12 to 35 kilogrammes, mostly of the mongrel type, and having kidneys varying in weight from 30 to 100 grammes, were used. Changes were stud-

ied after two, four, and eight days; two, three, and four weeks; two and three and a half months.

Of fifteen dogs operated upon, five died. A study of the urine was not made, as abundant opportunity has been offered to examine this in man after Edebohls's operation for movable kidney, when it frequently shows the presence of blood and hyaline casts.

The dogs that recovered did well after operation, showing little sign of shock. Deaths were due in two cases to hernia through the wound, caused by previous removal of the plaster. In the third dog which died, in addition to decapsulation of both kidneys, the left renal artery was ligated, and still another probably died from leakage of urine from the lacerated kidney into the peritoneal cavity. Only one dog, on which simple decapsulation was performed, died directly from the shock of operation. The deaths from hernia were due to careless application of the plaster bandages and could easily have been avoided.

After a brief résumé of the successful experiments the author submits the following summary of findings:

The capsule of the normal kidney consists of two distinct layers, the outer being much the thicker, while the inner is very thin, the direct continuation of the intertubular connective tissue.

In the operation of decapsulation the outer layer only is removed, leaving the inner lacerated but adherent to the kidney surface.

At first a thin exudate appears on the free surface of the kidney, which, with the remains of the inner layer, gradually becomes a fibrous investment, resembling macroscopically the normal capsule in that it strips readily, and with the passage of time it becomes more and more firm.

Microscopical examination reveals the fact that it is in some cases thicker and in others thinner than the original, the former generally being true, and that in most instances it varies greatly in thickness in the same specimen.

The structure, at least up to three and a half months, does not become differentiated into layers, but is one homogeneous mass of fibrous tissue.

One case revealed the fact that it will form under adhesions, and is to be recognized as distinct from them both microscopically and macroscopically.

There is sometimes an infiltration with round cells, and a proliferation of the intertubular connective tissue of the cortex, without, however, affecting the glomeruli. The dogs in whom these changes were noted remained perfectly well as far as could be shown by their appetite, strength, and playfulness.

In no case was there any considerable anastomosis between the renal and perirenal blood channels. In one case, at the same time decapsulation of one kidney was performed the renal artery of the other was ligated. This would presumably call for increased activity in the circulation of the decapsulated kidney. It was all, however, made up by the increased size of the renal artery and vein, and not through a peripheral anastomosis.

In conclusion, the author believes that there are many difficulties in the way of drawing inferences as to the value of this measure as a curative or a palliative one in chronic glomerulonephritis. The chief one is that it has up to the present time been found impossible to give a dog interstitial glomerulonephritis, and he quotes Herter (*Philadelphia Medical Journal*, 1898) as having made repeated but futile efforts with different metallic poisons to experimentally induce glomerular and interstitial lesions in rabbits and dogs. Herter was able to produce merely the lesions of acute degenerative nephritis and congestion. Morse found that toxins of the staphylococcus pyogenes aureus were capable of initiating those proliferative changes in the interstitial tissues which constitute so prominent a lesion of chronic diffuse nephritis.

Cracow, Maximoff, Davidson, and others have shown that it is possible to produce amyloid changes in the kidney by repeated injections of the filtrate from cultures of the golden coccus readily in the hen, less readily in the rabbit. The amyloid material so formed corresponds closely to that found in man. Herter also used young pigs ten weeks old, two to four ounces of alcohol being given daily. The kidneys after this treatment became large and pale, with distended tubules,

while the epithelium was granular and fatty; there were no interstitial changes. It being considered impracticable to produce lesions in the dog's kidney comparable to those in man over a sufficient length of time or with any degree of certainty, it was decided to study only the changes following decapsulation of the normal kidney, and in two cases the effect on the perirenal circulation: first, of the ligation of the renal artery of one kidney with decapsulation of the other; and secondly, of simple unilateral nephrectomy. In neither case was the perirenal circulation appreciably increased.

Edebohls draws these conclusions from his operations on patients suffering from chronic Bright's disease in which the method of decapsulation has been employed: First, that chronic Bright's disease can be cured by decapsulation of the kidneys in a large percentage of cases; secondly, that the cause of the cure lies probably in the establishment of a collateral circulation between the blood-vessels in the adhesions and those of the kidney.

Schmitt, in a very able review of the clinical evidence (*New York Medical Record,* Sept. 13, 1902), raises the following points in objection to Edebohls's first conclusion:

1. Included in Edebohls's cases are some operated upon for movable kidney in which chronic nephritis was diagnosed. As a movable kidney by tension on the vessels may become congested, the presence of casts and other alterations of the urine found in chronic Bright's disease is not unusual.

2. In most of the other cases a sufficient length of time had not elapsed to make the claim of the cure of the disease a justifiable one.

3. In a large proportion of his cases, Edebohls claims that one kidney alone was affected; whereas Kummel and Strauss have found that it is bilateral in every case of Bright's disease examined by them, basing their conclusions on ureteral catheterization.

4. In Edebohls's case, and two reported by Furguson, where a small portion of the cortex was removed for examination, the section of tissue taken was not sufficiently comprehensive to allow of a positive diagnosis.

As to the theory of Edebohls, that the benefits sometimes derived from this operation are due to the establishment of a collateral circulation, the writer advances the opinion of Israel and Pousson, who believe that it is due to relief of tension from splitting the capsule of the kidney. Israel disclaims all intention of surgically treating Bright's disease, only employing operative measures when it gives rise to otherwise intractable symptoms of hematuria and colic, which furthermore must be traceable to one side only. Pousson believes that there is a sympathetic relation between the kidneys as between the eyes, and that an operation upon one will frequently relieve the condition existing in the other. He uses protracted drainage in all his cases.

Harrison employs renipuncture or division of the capsule, and gives the following indications for their use:

1. Suppression of urine with alarming symptoms in scarlatinal nephritis.

2. Progressive signs of kidney degeneration as shown by the persistence or increase of albumin.

3. Where a marked disturbance of the heart and circulatory apparatus arises in the course of inflammatory renal disorders.

The second conclusion of Edebohls, namely, that the improvement is due to the formation of new blood-vessels which anastomose with those of the kidney, has so far not been confirmed by evidence from the autopsy table. Furthermore, it has been shown that added demands on the circulation of one kidney caused by the removal of the other, either with or without decapsulation of the first, do not in the dog produce an increased vascularity of the perirenal tissues.

THERAPEUTIC VALUE OF CATHODE AND ULTRAVIOLET RAYS.

PARK (*Medical News*, May 30, 1903) states that cathode and ultraviolet rays afford methods of treatment for extremely new growths of limited area and superficial character, which, while not exactly certain, are extremely promising. They not only cause no pain, but tend to relieve

pain, both superficial and deep. They are adapted to cases which can hardly be submitted to any other method of treatment, and they afford more hope in delayed or inoperable cases than does any other method of treatment. It will often be found that the odor of putrefaction may be suppressed by their use and the putrefactive process itself checked. Burns and intense dermatitis, so frequently noted when the treatment first came into vogue, almost certainly may now be avoided. More than this, they afford a supplementary treatment after operation, by which the benefits of the same may be enhanced and enlarged. One of the most comforting aspects of their use is the relief from pain which they afford, even when this pain is deep-seated and of uncertain origin. Even such use of the *x*-rays as is called for in an ordinary fluoroscopic examination has been known to relieve pain, although by it nothing else was accomplished. In certain inoperable cases of intraperitoneal cancer and tuberculosis, accompanied by more or less ascites, cathode rays have relieved pain, retarded extension of the disease, and apparently been of great benefit, even if such benefit prove but temporary. The *x*-rays apparently will also relieve itching in certain instances, and may especially be used for the removal of hair for cosmetic reasons or in the treatment of sycosis, of favus, of psoriasis, and will be found serviceable in the cure of those birthmarks which are covered with, or surrounded by, considerable growth of hair. So far as phototherapy is concerned it must necessarily find its widest range of application when the disease is limited to a small area and is superficial.

BULLET LODGED IN THE RIGHT VENTRICLE.

RIETHUS (*Deutsche Zeitschrift für Chirurgie,* Bd. 67) reports the case of a young man, aged nineteen years, who was shot in the chest with a 6-millimeter bullet from a revolver. The patient was admitted to the hospital in a condition of profound shock two hours after the injury; pulse running 110 to the minute and radial pulse not palpable. The wound of entrance was located over the sternum on a level with the attachment of the fourth rib, and one fingerbreadth to the right of the median line.

By the end of the first twenty-four hours the patient had reacted fully, felt perfectly well, and presented no abdominal symptoms beyond slight pain in the bullet wound.

Except for the occurrence of a small serosanguineous pleural effusion which cleared up spontaneously, the patient made a rapid convalescence until the sixteenth day, when he developed a peculiar irregularity of the pulse. Several regular full beats would be followed by cessation of the pulse for a variable period, and then there would occur several weak, rapid pulsations with a gradual return to the normal type.

By means of skiagraphs taken from different angles the bullet was located in the heart, apparently in the right ventricle. By careful examination with the fluoroscope it was found that the bullet was not fixed, and that it changed its position within certain limits. In general the bullet followed the movements of the heart during systole and diastole, but in addition it had an independent motion.

During a single cardiac cycle the bullet would spring suddenly either upward or laterally, and after several vibrating movements would fall back into its original position, where it would shift from side to side during several cardiac contractions, and then again independently of the cardiac rhythm it would exhibit upward and downward movements.

As long as irregularity of the heart action continued repeated fluoroscopic examinations disclosed the same shifting movements of the bullet. After continuing for a period of six months the irregularity of the pulse rapidly subsided, and it was found that the pronounced "springing" movements of the bullet had disappeared, but lateral movements synchronous with the heart-beats still persisted.

A year has elapsed since the receipt of the injury, and now no motion of the bullet within the ventricle can be observed.

At the time of the injury it is probable that the bullet barely penetrated the ventricular wall, where it remained embedded until the sixteenth day, when it became dislodged and fell into the cavity of the

right ventricle, causing the irregularity of the heart by irritation of the endocardium. Later, as the pulse returned to normal, the bullet probably became fixed by adhesions.

ACCIDENTAL PERFORATION OF THE UTERUS.

BROTHERS (*American Gynecology*, April, 1903) notes that the first set of cases of perforation of the uterus are those which occur during the passage of a sound or curette. The accident is recognized from the fact that the instrument passes to a depth beyond that of the size of the uterus previously mapped out by bimanual examination. The suspicion that the instrument has passed into a Fallopian tube may justifiably arise, but in the present state of our knowledge cannot be safely assumed. These cases will usually get well if manipulations within the uterine interior are brought to a sudden termination, and particularly if no intra-uterine irrigations are made. If the curettage or sounding was preliminary to an intraperitoneal operation, this may be proceeded with and the injury to the uterus repaired with several catgut sutures. No drainage is necessary. If no intraperitoneal operation was originally projected, the patient ordinarily can be safely put to bed with an ice-bag over the hypogastrium and given morphine or opiates.

If the uterus has been injured and the operator has irrigated the uterus, three sets of conditions may arise. In the first set a mild local peritonitis may call for nothing more than the same line of treatment. In the second set an acute septic peritonitis may call for a hysterectomy (usually vaginal) with drainage per vaginam. The third set of cases may be less virulent and more chronic. They are apt to terminate in abscesses, which may be located in the pelvic connective tissue or in the pelvic peritoneum. According to their seat they may require being attacked from above or below. Very rarely will a hysterectomy be indicated in such cases. The operation will be in the nature of an exploratory laparotomy, and the exact line of work can only be determined on with the abdominal cavity opened.

When the uterus has been injured and the intestine dragged through the wound and become strangulated, laparotomy must be done as early as possible. If the strangulation has been fatal to the vitality of the gut, this must be exsected. The uterus may then, according to the judgment of the operator, be repaired or removed. That even this state of affairs is not necessarily fatal can be inferred from the studies of Miquel, who reports five recoveries in eight operations.

PERINEAL PROSTATECTOMY.

ALBARRAN (*Annal. d. Mal. d. Organ. Génito-Urinaires*, December, 1902) reports the results in thirty cases of prostatic hypertrophy treated by perineal prostatectomy, the cases being under observation from six months to two years and three months after the operation.

The operation consisted in exposing the gland by a transverse incision in front of the rectum without sectioning the levators; decapsulating the gland and removing in pieces, attempting to avoid injury to the neck of the bladder, except in cases associated with vesical calculus. Perineal drainage was established for three to five days after the operation.

Forty-two cases have been successfully operated upon, but only thirty of them have been under continuous observation since operation. One case terminated fatally five weeks after operation without any relief of symptoms.

Of the thirty cases, four were cases of acute complete retention followed by complete cure. Twelve cases had chronic complete retention dating from eight months to ten years, occurring for the most part in patients of seventy to seventy-five years of age, all of whom are now able to void urine spontaneously. In fourteen patients suffering with chronic incomplete retention, nine are able to empty the bladder completely, three are greatly benefited, while two, though relieved of symptoms, still have the same amount of residual urine as before operation. The results in cases of incomplete retention are the least favorable, although all the patients operated upon are greatly benefited. Urination is no longer painful, although in a small percentage of cases too frequent,

and the urine is clear. In the fourteen cases complicated by vesical calculus there has been no return of the stone.

The classes of cases least favorable for this operation are those in which the prostate is moderately hypertrophied although the disease is of long duration; those in which the cystitis is of long standing; those in which the prostate does not form a protuberance into the neck of the bladder; and those in which the hypertrophy is purely glandular and not of the adenofibroma type.

HYPERHIDROSIS OF THE FEET TREATED BY FORMALIN.

From observations made on soldiers in the French army, VAILLARD (*Archiv. d. Méd. et d. Pharm. Militaires,* January, 1903) reports favorably upon the results of formalin treatment for excessive sweating of the plantar surface of the feet.

The effect of formalin is to deodorize the perspiration when it is fetid; to harden the epidermis, thereby avoiding the consequences of maceration; to diminish or totally suppress the glandular secretion by its action upon the epithelium; and finally to heal the excoriations by its local antiseptic action.

The strength of solution employed varies from the commercial formaldehyde (40-per-cent formalin) to 2.5 per cent, according to the nature of the case. If there is much maceration and excoriation of the skin the weakest dilution should be applied at first, and then rapidly increased in strength.

The method of application is to bandage wet compresses to the soles of the feet three or four times in the twenty-four hours, care being taken to protect the interdigital surface, since here formalin causes great pain and often excoriation. The period during which the applications are made necessarily varies from twenty-four hours to eight days, according to the strength of the solution used. In those cases in which the pure formaldehyde can be used the cure is almost immediate. The benefits derived from the treatment are only temporary, lasting from a few weeks to three months, but are quickly renewed by a repetition of the applications.

THE LIGHT TREATMENT IN LUPUS AND OTHER DISEASES OF THE SKIN.

The physical principles on which Finsen's method of treating lupus and other diseases of the skin by means of the chemical rays of light is based are summed up in the following propositions by MORRIS and DORE in the *Practitioner* for April, 1903:

1. Light acts as a stimulant of organic life. The stimulating property has been shown to reside chiefly in the actinic or chemical rays of light.

2. The chemical rays have the property of causing an inflammation of the skin. "Erythema solare" is due to the action of the actinic rays.

3. Light has bactericidal properties. The bactericidal action increases in direct proportion to the degree of concentration of the rays.

4. Light can penetrate the skin.

5. Other facts bearing on the point are the effect of light on plants, the protective value of pigmentation in animals, and the exclusion of the chemical rays in the treatment of variola.

Finsen's method has now become established as a recognized method of treatment for lupus in most of the medical centers of Europe. The percentage of successes claimed by Finsen in the treatment of 804 cases of lupus vulgaris is ninety-four, while that of failures is only six.

The authors' results, though not so brilliant as those claimed by Finsen, have been satisfactory in a considerable number of the cases of lupus vulgaris treated by them. It is impossible, however, by mere statistics to give an adequate impression of the good effects of the treatment. Many of the cases have been of so severe a type that even the arrest of the progress of the disease has been looked upon as a favorable result. In most of the cases in which a complete cure has been effected, the affected area has been of small extent. The greater number of the more extensive cases are still under observation, and require a short course of treatment from time to time as recurrent nodules of the lupus make their appearance. It must not be forgotten that though the treatment is tedious in

severe cases, the time expended is after all but a small proportion of the period during which the disease may last, if it is allowed to run its own course, or if it is treated by other methods. When, however, sufficient time has elapsed for complete healing to take place in slight cases, and for definite improvement with only an occasional relapse to be observed in more extensive cases, there is good reason to hope that the ultimate results will more that compensate for the time and labor expended in the treatment.

In order that good results may be obtained it is imperative that the patient be kept under observation for a long time. If this condition is not enforced, the disease may recur and much valuable time will be wasted. In none of the extensive cases under the authors' care can they yet claim a complete cure. Relapses, however, are becoming fewer, and the interval between them far longer. Of the sixty-five cases of lupus vulgaris, eleven have remained without relapse for periods varying from six months to two years. In ten of them, all favorable cases in which the disease was of small extent, recovery has been complete. In the eleventh, where the disease was more extensive, there has been no recurrence for a year. In fifteen cases slight remnants of the disease remain or slight relapses have occurred from time to time, and the patients are still kept under observation. In five of these the affected surfaces were very extensive, in five of medium extent, in four of slight extent, and in one—treated with *x*-rays only—the disease involved the mucous membranes of the upper lip and gums. Eight were discharged with no visible trace of disease, except in two cases, on the mucous membrane of the nose; they have not been seen since. Fifteen are still under treatment. Of fourteen patients in whom the treatment was not completed, all who remained sufficiently long markedly improved. Four have almost recovered, while four did not have sufficient treatment for much good to be done. In two cases, in which ulceration was the marked feature, Finsen's light was useless. In both the ulcers healed rapidly under the application of the *x*-rays. In one the ulcerated part has, so far as known, remained soundly healed; in the second healing took place, but relapse occurred, and the lesion was excised. In all the cases but one, disease of the mucous membranes, when present, was treated by means of *x*-rays, and in all except one, in which there was no improvement, with good results.

Of eleven cases of lupus erythematosus, great improvement took place in seven; in one patient in whom the result was the most successful the disease relapsed as soon as the patient ceased to attend. The other six patients have not been seen since they discontinued the treatment, but in none of them was the disease completely eradicated. In one patient no benefit resulted, and in another sufficient time was not given to the treatment. Two are still under treatment. All these cases were treated with Finsen's light.

Of twenty-seven cases of rodent ulcer, favorable results were obtained in twelve. In most of these Finsen and *x*-ray treatment was combined. In most of them slight relapses have occurred, necessitating a second or a third course of treatment. Sufficient time has not yet elapsed to make it possible to say if recovery is likely to be permanent. Nine of the twenty-seven cases were in the non-ulcerative stage, and the disease was of small extent. In one case, in which the upper and lower eyelids, the inner canthus, and the adjacent side of the nose were involved, improvement was very marked after many exposures to *x*-rays. A somewhat severe dermatitis followed, during which the deepest ulcer healed. This patient had undergone eight surgical operations. There has been no recurrence of the disease for over a year. In eleven treatment was not completed; in six of these great improvement or apparent disappearance of the disease resulted at the time, but they have either not reported themselves since or have had treatment elsewhere. Of the other five, two have been operated upon, two discontinued their attendance, and one patient, a very bad case, showed great improvement under *x*-ray treatment, but has since written to say that the disease has relapsed. Three are still under treatment.

In two cases of alopecia, one improved

under Finsen's treatment, but the new hair fell out again, and treatment was discontinued; in the other there was no effect, but the patient only had a few exposures at rather long intervals. In one case of keloid the result was unsatisfactory.

The process of concentrating or focusing the rays of light before they reach the skin is the principle on which the original Finsen lamp is constructed, and in the newer small Finsen-Reyn lamp the same principle is adopted. According to Finsen, concentration is essential in order that the full effect—penetration and intensity—of the light may be obtained. In the French lamp of Lortet and Genoud, the divergent rays of the electric arc are not first made parallel and then convergent by a system of lenses, as in the Finsen apparatus, but the patient is brought close to the source of light just as they begin to diverge. There is therefore no focusing in this lamp, and consequently the intensity and penetration of the light are not so great. Only one layer of circulating water is interposed between the patient's skin and the source of light, so that the heat-rays are not so well eliminated, and the effect is therefore more caustic and more of the nature of a burn, as well as more superficial, than that of the Finsen lamp. The various modifications of the French lamp differ only in mechanical details, the principle of construction being the same. The area of skin treated with this lamp is much larger (four times) than that dealt with by the Finsen lamp, and the exposure is only ten minutes or fifteen minutes instead of the hour with the larger apparatus. The amperage is 10-15 instead of 60-80 (the new small Finsen lamp requires 15-20 amperes). The pressure is exerted by the patient himself, assisted perhaps by a nurse; there is no compressing-glass to be held or strapped on as in Finsen's method.

The original Finsen lamp gives the best results on account of the greater intensity and penetrating power of the concentrated light. The French lamp is serviceable in very extensive cases, on account of the time saved, and in superficial cases the authors have used it as a preliminary to the employment of the Finsen lamp.

In dermatological practice nothing can be done by other means of applying light, such as reflected arc-light passed through blue glass and thrown upon the body of the patient like a searchlight, nor by the use of high-frequency currents, that cannot be more effectively compassed by the Finsen light and *x*-rays.

The disadvantages of the treatment are the great length of time required—the patient must be kept under observation for one to three years; the tediousness of the treatment for one hour daily, and the loss of time which it involves; the occasional pain during the application; the inconvenience and pain caused by continual inflammatory reaction in parts treated; the expense of outlay and working.

The advantages are the excellent cosmetic results; no bad scar or disfigurement results from the continual applications; no anesthetic is required; no injurious effect is produced on the general health; the trustworthiness of the method—improvement may be expected in all cases, provided sufficient time is given to the treatment.

The following conditions are unfavorable for the treatment:

1. Factors which hinder penetration of the light, and thus prevent a good reaction. Among these are pigmentation, dark complexion, and thick skin; great depth and infiltration of the disease; scarring from previous treatment; great vascularity of the parts.

2. Great extent of the disease.

3. Inaccessible position—*e. g.*, mucous membrane of the nose, etc.

4. Certain general factors not specially applying to the light treatment. Among these are:

(*a*) Age. In general terms, the older the patient the worse the prognosis.

(*b*) Sex. Males as a rule cannot give up sufficient time to the treatment.

(*c*) Predisposition. A marked family history of tuberculosis is somewhat against the patient, as are other tubercular tendencies or manifestations in the patient himself.

(*d*) Occupation. Unhealthy surroundings or dirty occupations make septic infection probable, and also reduce the vitality of the patient's tissues.

The light treatment often requires to

be reënforced in various ways. Thus in cases where the disease is very extensive or where there is much infiltration, scraping followed by *x*-rays may usefully be employed as a preliminary to the application of Finsen's method; or the *x*-rays alone may first be used and followed up by the Finsen treatment; or the French lamp may be employed to begin with, Finsen's method being used later. The *x*-rays may also be combined with Finsen's light treatment. These methods may be further reënforced by the application of caustic remedies, such as pyrogallic acid or pyrogallic acid and salicylic acid followed by *x*-rays or Finsen. The same applications may be followed by *x*-rays or Finsen before healing has taken place. Weak ointments of the same caustics may also be used simultaneously with Finsen's method.

The following methods of reënforcement may be employed in slight cases, if refractory, or to get rid of remaining refractory nodules:

Pyrogallic acid, acid nitrate of mercury, silver nitrate, or pure carbolic acid to remove horny layer; strong carbolic acid, aniline oil, or clove oil to make horny layer transparent; carbolic acid, tincture of iodine, or permanganate of potash to increase reaction.

Treatment with *x*-rays appears to increase the reaction caused by the Finsen method when the latter is applied subsequently. In one of the cases in which a part of the face was treated by *x*-rays, subsequent treatment by Finsen's method caused reactions which took weeks, and even months, to heal. On other parts treated continually by Finsen's method this did not occur.

The cosmetic effects of the light treatment are its most valuable asset, and of greater importance than its comparative painlessness, its reliability, or the permanence of its results. As regards the last point, the results are at first sight somewhat disappointing. Relapses frequently occur, and it is necessary to keep patients under observation for two, three, or more years, so that the recurrent nodules may be treated as soon as they appear. If this is not done the disease may fall back to its original state. It is only in slight cases so far that claim can be made to permanent results, taking two years without recurrence as a standard of permanence. Even in the most successful of the extensive cases, subsequent treatment has been required at intervals, although it is hoped the time will come when the disease will be entirely eradicated. It must, however, be borne in mind that in many of these cases almost every known form of treatment has been tried, and no other method has given such satisfactory results as the light treatment. Even in the worst cases the spread of the disease has been checked if sufficient time has been given to the treatment.

THE SINGLE CUFF METHOD OF CIRCULAR ENTERORRHAPHY.

A new method of circular enterorrhaphy is described by CAMPBELL (*Journal of the American Medical Association*, May 30, 1903).

The intestine is drawn out through the abdominal incision and its course determined. The contents of the intestine are stripped downward and tapes or clamps applied. The mesenteric arteries are ligated. A knife is passed through the mesentery and made to encircle the bowel, cutting through serosa and muscularis. A cuff of serosa and muscularis five centimeters in length, with the mesentery, is rolled back by means of gauze dissection on the distal portion of the bowel, which is well protected with gauze. The bowel thus denuded is severed at its distal end and within one centimeter of the cuff. At the proximal end it is severed flush with the primary incision. Eight through-and-through sutures, the knots placed within the lumen of the bowel, unite the proximal end of the bowel to the denuded stump at the distal end. The cuff is now rolled over the site of union on to the proximal end of the bowel and made secure by a suture placed through the mesentery close to the bowel, and three interrupted sutures placed in the cuff through serosa and muscularis of the underlying bowel.

The cuff completely covers the sutures placed through the proximal end of the intestine and the stump of the distal end, so that leakage cannot occur, as plastic lymph and blood agglutinate the cuff to the serosa of the proximal end of the intestine. There can be no increase of tension on the sutures placed through the

proximal end of the intestine and the stump on the resumption of peristalsis, because of the rapid union between the cuff and the serosa of the proximal end of the intestine. The caliber of the lumen of the bowel at the point of union is unchanged.

The author argues that it is practical, easy of accomplishment, and quick of execution, claiming that it is the most natural way of uniting the severed ends of the intestine. The cuff so covers and protects the sutures placed through the proximal end of the intestine and the stump of the distal end that the direct line of leakage and infection is obviated. Pressure necrosis and leakage is not probable, and union is quite certain, as the blood-supply to the cuff and the proximal end of the bowel that is covered by the cuff is undisturbed. It is the most rapid of all methods, requiring but from five to eight minutes for its complete accomplishment. It is the least complicated of any of the different methods now in use, and it can be safely performed by the ordinary surgeon, who rarely is called on to resect an intestine, quite as well as by one greatly skilled in intestinal surgery. Convalescence is more rapid and fewer postoperative sequelæ are likely to occur. It is applicable to any part of the intestinal tract. The security against primary and secondary leakage furnished by the cuff makes it the safest of all methods.

Reviews.

ORGANIC NERVOUS DISEASES. By M. Allen Starr, M.D., Ph.D., LL.D.
Philadelphia and New York: Lea Brothers & Co., 1903.

The literature of American medicine is distinctly enriched by this splendid book upon organic nervous diseases which has been prepared by Dr. Starr. The author and the publisher have vied with one another to produce a work in which the illustrations are, from a technical and artistic point of view, most excellent, and Dr. Starr's wide experience in the clinical study of nervous diseases has fitted him to present salient points concisely and accurately. Many of the illustrations, both microscopical and gross, are original, and the others are selected with great care. We notice in regard to the mooted pathology of Landry's paralysis that Dr. Starr believes it is an acute infectious malady which sometimes attacks the spinal cord and sometimes the peripheral nerves, and this change in the point of attack in different cases explains the absence of cord lesions in some cases, and their presence in others. Little is said of the disease epilepsy, no direct reference being made to it in the index, because the author does not consider it an organic nervous disease; but Jacksonian epilepsy is well described. In regard to the value of nitrate of silver in locomotor ataxia, we are interested to find that Dr. Starr thinks that this drug still has some reputation, and that it should be administered with kaolin in a capsule rather than with one of the vegetable extracts, which tend to decompose it. We have thought that this use of nitrate of silver was rapidly becoming obsolete. Dr. Starr is also an advocate of the institution of muscle training according to the method of Fraenkel, and states that he has known patients who have been unable to walk for several years to regain some of their power under the persistent and patient application of this method. For the muscular twitchings in the limbs, which are sometimes most noticeable at night, he believes that the bromides are useful.

There are three chief points in this book which strike us as being particularly noteworthy: First, the excellent character of the illustrations, both as to execution and as to their clear demonstration of the text; secondly, the concise yet adequate remarks as to treatment; and thirdly, the very careful descriptions of the pathological changes which modern neurology recognizes as being the underlying cause of the various diseases which Dr. Starr considers.

A REFERENCE HANDBOOK OF THE MEDICAL SCIENCES. Edited by Albert H. Buck, M.D. Volume VI.
New York: William Wood & Co., 1903.

During the past eighteen months we have had occasion to speak in terms of high praise of this excellent and exhaustive encyclopedia of medicine, which is now appearing in what might be called its second edition. The interval between the appearance of Volume VI and its prede-

cessor has been longer than the intervals occurring between earlier volumes. But any disappointment which may have ensued by reason of the delay is more than compensated by the excellence of the text as it now appears. The colored plates which are scattered through the volume are excellent.

It is to be remembered that this handbook is supposed to embrace the entire range of scientific and practical medicine and allied sciences. The book can be most cordially recommended to practitioners in every branch of the profession.

A System of Physiologic Therapeutics. Edited by S. Solis Cohen. Volume X: Pneumotherapy and Inhalants. By Dr. Paul Louis Tissier.
Philadelphia: P. Blakiston's Son & Co., 1903.

Readers of the GAZETTE are acquainted, because of our notice of earlier volumes, with the object of this excellent system, which, as its title indicates, is designed to emphasize the value of remedial measures other than drugs. As with many of its predecessors, this volume is freely illustrated. When it comes to the consideration of the inhalation treatment of disease a large number of methods for the treatment of diseases of the respiratory passages are described. While many of the measures recommended in the portion devoted to pneumotherapy are entirely out of the reach of the general practitioner, and indeed cannot well be employed even in large cities because of the lack of apparatus, nevertheless this part of the book provides a large amount of valuable information which both directly and indirectly is useful to physician and patient.

The Prevention of Disease. A Translation from the German, in Two Volumes.
New York: The Funk and Wagnalls Co., 1903.

These two volumes, of about 500 pages each, consist in a series of articles by various German authorities upon the measures which should be introduced in the household and by physicians for the prevention not only of infectious diseases, but also of many organic maladies. The book is really intended more for the laity than for the medical profession, although there are many facts in it which are of value to practitioners. Physicians who really wish to keep themselves in touch with various prophylactic measures will probably prefer to purchase well recognized works upon hygiene, but when they are asked for literature of a more popular type we think that they can recommend the books now under review, provided the inquirer is sufficiently intelligent to study the questions of hygiene without being carried away by exaggerated ideas as to the various measures of relief which should be instituted.

A Treatise on Materia Medica and Therapeutics. By Rakhaldas Ghosh, L.M.S.
Calcutta: Hilton & Co., 1903.

We are told in the preface of this small octavo volume, which is the second one issued from the pen of Dr. Ghosh, that owing to his untimely death, his friend, Mr. Lukis, has completed it and carried it through the printers' hands. It is really a most excellent compilation of the large subject of which it treats, resembling in some respects the book of Dr. W. Hale White, of London, in its original form. As it deals with preparations which are official in the British Pharmacopœia, it will not appear particularly useful to American students, but we are glad to have it for reference, and doubt not that it will prove most popular with East Indian practitioners and with those who wish to be well acquainted not only with the drugs which we commonly employ, but with those used in the far East as well.

Uric Acid as a Factor in the Causation of Disease. By Alexander Haig, M.A., M.B., F.R.C.P. Sixth Edition. Price, $3.50.
Philadelphia: P. Blakiston's Son & Co., 1903.

Dr. Haig is known all over the world by reason of the large number of papers which he has written upon this important subject. Quite ten years ago we pointed out in a review in these columns that while all his works showed evidence of great industry, it seemed to us that in some respects the bases upon which he placed his investigations were hypotheses rather than facts. As in nearly all instances where an author is particularly enthusiastic in regard to a certain theory, Dr. Haig takes at times, we think, very radical views, many of which can be readily refuted. Nevertheless, Dr. Haig has rendered the profession a valuable service in

that he has emphasized the fact that disorders of metabolism require more careful study than has heretofore been given them, and that many conditions of ill health depend upon these disorders, although physiological chemistry is teaching us that in a large proportion of cases the symptoms are due not to uric acid itself, but to other products of the body which are very much more poisonous. Whether the reader believes with Dr. Haig that uric acid is the important factor in the creation of a large number of maladies or not, the sixth edition of his work deserves careful perusal, since it is pregnant with many original thoughts which are without doubt of great value.

THE FIRST PRINCIPLES OF OTOLOGY. A Text-Book for Medical Students. By Albert H. Buck, M.D. Second Edition. Price, $1.50.
New York: William Wood & Co., 1903.

The first edition of this small octavo volume was published four years ago for the use of the students at the College of Physicians and Surgeons of New York, and has proved so useful to them that the publishers are hopeful that it will find favor with teachers of otology in other medical schools. Dr. Buck is well known to the medical profesison as a competent aurist, and also because of the large amount of literary work which he has performed. The present volume does not profess to be an exhaustive treatise upon disease of the ear, but rather a *vade mecum*—more than a quiz-compend, but less than a treatise.

GENITO-URINARY AND VENEREAL DISEASES. A Manual for Students and Practitioners. By Louis E. Schmidt, M.Sc., M.D. Series Edited by V. C. Pederson, A.M., M.D.
Philadelphia and New York: Lea Brothers & Co., 1902.

In the author's preface, which should always be read by the reviewer at least, it is stated that the present volume endeavors briefly and clearly to afford a comprehensive survey of genito-urinary and venereal diseases within a compact space, with camera-like accuracy and proportion, preserving all their essentials in their proper place and proportion.

The author holds that the term venereal diseases applied strictly should include only such as are acquired during sexual intercourse, and includes under this general heading gonorrhea, chancroid, and syphilis. The subject of syphilis is covered in 22 pages; but five pages are devoted to chancroid. These two subjects are included in part one, which is headed "Venereal Diseases." Part two, headed "Genito-urinary Diseases," is devoted to gonorrhea and its sequelæ, diseases of the coverings of the testicles and cord, diseases of the bladder, sexual disorders of the male, and diseases of the kidneys. To each section of the book is appended a list of questions.

In general terms it may be said that this work is carelessly compiled, not entirely modern, at times erratic in therapeutics, and not likely to be serviceable to any one except possibly a derelict student coaching for examination.

MORE LIGHT ON A DARK SUBJECT. A Series of Lessons in Higher Physiology for the Benefit of Parents and Posterity. By Dr. J. R. Bailey.
Ashland, Wisconsin: Chequamegon Press, 1903.

This book is intended as an educator of the laity on sexual matters, and hence requires on the part of its writer not only a wide experience, but an unusual delicacy of conception and purity of expression.

It begins with a chapter on the cellular origin of man, which, though brief, is confusing. Next follows the anatomy of the sexual organs and what is called "the physiology of their functions." The author states that this book will endeavor to make a few of the mysteries plain. He has no doubt done so, but not as clearly, forcibly, and directly as has been done many times before.

This is a rambling, feeble work, the need for which is hard to understand. Many of the ideas are excellent, and the motive prompting the writing is doubtless a good one.

SURGICAL ASEPSIS. By Henry B. Palmer, M.D.
Philadelphia: F. A. Davis Company, 1903.

This book has been written for surgeons who often operate outside of hospitals, and for the general practitioner who may do some surgery or who has the after-care of surgical cases, and hence should not be judged in the light of a modern text-book on surgical technique. None the less the general subject of aseptic wound treatment, pathogenic bacteria, sources of in-

fection, and means of sterilization are carefully considered. It may be stated as a general criticism that although the methods described are excellent there is too great multiplicity. When a man has acquired sufficient experience to justify him in publishing a book, his readers expect to find not a general résumé of all the procedures employed by various surgeons, but rather the choice which he himself has made and which he has successfully employed.

There is a final chapter on aseptic midwifery. The book has been carefully prepared, and in certain directions is likely to prove useful to the general practitioner.

DISEASES OF WOMEN. A Manual of Gynecology, Designed Especially for the Use of Students and General Practitioners. By F. H. Davenport, A.B., M.D.
Philadelphia and New York: Lea Brothers & Co., 1902.

This excellent and well balanced manual is likely to be most useful to students and general practitioners, for whose use it was compiled. It possesses the merit of clear, forcible, modern teaching, a careful selection of the subjects of greatest importance, an easily comprehended description of operative or other treatment applicable to the various pathological conditions described. The excellence of the compilation thoroughly explains the popularity of previous editions. It is likely to have an even more cordial reception at the hands of the profession when its merits are widely known.

STUDIES IN THE PSYCHOLOGY OF SEX. Analysis of the Sexual Impulse Love and Pain. The Sexual Impulse in Women. By Havelock Ellis.
Philadelphia: F. A. Davis Company, 1903.

The prelude to this book is devoted to an analysis of the sexual impulse which, though exceedingly ingenious, entertaining perhaps because of the subject-matter, and indicative of a deep study of the subject, leaves us no wiser than we were before, excepting perhaps for a greater familiarity with two words, tumescence and detumescence.

The first chapter, devoted to love and pain, discovers in the relationship existing in animal courtship a cruelty which is likened to human play and courtship. Men delight in exerting force, and women rejoice in experiencing it. The second chapter is devoted to sadism and masochism, and as a natural sequel to this follows the chapter on flagellation. The varied emotions associated with buttock beating are described at length, together with the wide prevalence of the custom.

Under the heading of the "Sexual Impulse in Women" the author has excelled himself in psychological deductions from what to the man who has thought little of these matters seem extraordinary premises.

Certain appendices are added to the book dealing with the sexual instinct in savages, and the development of the sexual impulse.

To those whose interest is centered in the sexual instinct and its perversion, this book will prove entertaining reading; to those who are looking for a more thorough understanding it will prove enlightening; to those interested in psychical research it will prove stimulating. Though not in any way a great book it shows some experience, much thought, and an unusual mental suppleness.

Correspondence.

LONDON LETTER.

BY GEORGE F. STILL, M.A., M.D., F.R.C.P.

The past month has not been distinguished by any very remarkable events in the world of medicine in London. Most of the medical societies have completed their labors for the year, and weary reporters are estivating, as other animals hibernate, until the autumn session awakens them to toil again.

Royalty has been busy in the cause of medical charity. The king and queen and several members of the royal family attended a service in St. Paul's Cathedral when hospital Sunday collection was made, with the goodly result of over four thousand pounds, and within the same week the Princess of Wales opened a new nurses' home in connection with the British Lying-in Hospital, and the Prince of Wales made an eloquent appeal at a dinner on behalf of the Royal Medical Benevolent College.

One of the most interesting scientific communications of the month was that made by Dr. Aldren Turner to the Medico-chirurgical Society on the prognosis and curability of epilepsy. His remarks were based on a study of 366 cases, and only upon such as had been under observation at least two years. He does not consider that a family history of epilepsy makes the prognosis specially bad, but the age at onset is, he thinks, an important element in prognosis. When epilepsy begins under the age of ten years it is very intractable, if it begins between fifteen and twenty the chances of arrest or persistence are about equal, whilst during the next decade the disease is seldom curable. It is satisfactory to find that even after a duration of twenty years epilepsy may be arrested, but as might be expected the outlook is more hopeful during the first few years of the disease. When attacks occur at very short intervals the results of treatment are usually less satisfactory than in those in which the fits occur only once in several months. Major epilepsy would seem to be more amenable to treatment than either combined major and minor, or minor attacks alone. The effect of marriage is variable and not very marked, some patients being made worse, and some better. Pregnancy in some cases reduced the tendency to attacks, but lactation and the puerperal state appear specially to favor recurrence. The test of cure in any case should be complete abeyance of the fits for at least nine years.

Some interesting facts were brought forward in the discussion which followed. Nocturnal epilepsy was said to be less tractable than diurnal; the curability of epilepsy seems to be no greater since the introduction of bromide treatment than before; the majority of cases which failed to respond to treatment during the first year would probably not respond at all. Dr. Shuttleworth gave some statistics as to the mental condition of epileptic children; 17 per cent are thought suitable for education in the ordinary classes of elementary board schools; 27.5 per cent are only fit intellectually for the special classes for backward children; and 40 per cent are only fit for treatment in special institutions. Apart from the ordinary bromide treatment of epilepsy, one speaker said he had seen good results from the use of sodium sulphocarbolate combined with careful dieting; strophanthus also does good. The relation of fits to menstruation was considered, and sodium salicylate given just before the catamenial periods was mentioned as useful.

A case of considerable practical importance was discussed recently at Leeds, when Dr. McGregor Young reported an instance of acute mercurial poisoning in a woman whose uterus had been douched with a solution of mercury biniodide 1 in 3000. Retention of the placenta had necessitated the introduction of the hand into the uterus, and the mercurial douche followed by one of plain water was used as a safeguard against antisepsis. During the three weeks following delivery the patient suffered with relapses of mercurial symptoms, soreness and stiffness of the jaws, severe headache, coppery taste, purging, and tenesmus. The absence of salivation and stomatitis is usual in cases of acute mercurial poisoning, although these are such marked features in the more chronic cases. The solution used in this particular case was made by dissolving tabloids in water, and it was pointed out that such solutions when made in a hurry are apt to be imperfectly mixed, with the result that the bottom portion of the fluid may contain more of the drug than does the upper part; and if only this lower portion is used the patient may get more of the drug than was intended. Some speakers considered that if mercurial solutions are used at all for intra-uterine douching they should be used extremely weak, and that weak solutions of boric acid, or even carbolic acid or iodine, are safer than mercury. It has even been suggested that many deaths are due to the use of mercurial solutions in obstetric work, although the real cause of the disasters is not usually recognized.

A discussion is in progress at the Obstetrical Society on the nature of so-called chorion epithelioma, which Dr. Teacher, of Glasgow, maintains is neither sarcoma nor carcinoma, but something entirely *sui generis*. At one time most observers regarded these growths as sarcomata, but now there is much difference of opinion. Dr. Horrocks thinks that there are two

kinds of malignant growth associated with pregnancy—the one of decidual, *i. e.* maternal, origin, which is sarcomatous; the other a chorion epithelioma of fetal origin, which is carcinomatous. Dr. Haultain considers that the finding of syncytial masses in uterine scrapings, especially if the finding is just after expulsion of a mole, is no justification for such radical treatment as hysterectomy, for pieces might be retained without showing any tendency to malignancy, and simple curetting might be quite sufficient. It was agreed that tumors showing exactly similar histological appearances might be found in females who had never been pregnant, and even in males, and in various parts of the body—for instance, the mediastinum—so that the term chorion epithelioma is hardly satisfactory.

A subject in which perhaps more responsibility rests with the medical profession than is always realized—namely, the abuse of alcohol—was considered at a suburban medical society recently, and the pathological effects of alcohol had a distinguished exponent in Prof. Sims Woodhead. Rapid degeneration of protoplasm and changes in nerve-cells sufficiently worked to be clearly demonstrated by the microscope had been observed experimentally from the administration of alcohol. Alcohol also interfered with the elimination of waste products from the body, and these added a further toxic effect in irritative and degenerative processes to those more directly due to the alcohol. Dr. J. G. Glover quoted many well known medical authorities who have expressed their belief in the limited value of alcohol in therapeutics. It has been shown that actually better results are obtained in typhus fever when this stimulant is omitted than when it is used, and great doubt has been expressed as to the value of alcohol in large quantities in typhoid fever. It has been shown that the free use of alcohol so far from preventing phthisis actually seems to favor its onset; and of recent years the wide prevalence of insanity has been attributed by high authority partly to the increasing use of alcohol. On one point Dr. Glover laid considerable stress, namely, the popular delusion that whiskey is an innocent and harmless drink for old and young, a delusion which perhaps owes its currency partly to too frequent medical sanction; and he quoted Sir William Roberts as agreeing that the quantity of stimulants taken should be less rather than more as age advances.

The treatment of aneurism by subcutaneous injection of gelatin is to the fore again. At the Dreadnaught Hospital, Greenwich, four cases have recently been treated with injections of a two-per-cent solution of gelatin injected subcutaneously on the inner side of the thigh. About seventeen injections, each of 100 cubic centimeters, were given. The aneurism was aortic in three of the cases, and abdominal in the remaining one. The formula used was the following: Gelatin, 1 ounce; sodium chloride, 131 grains; distilled (sterile) water, 50 ounces. The results obtained by Dr. Guthrie Rankin were distinctly good; the symptoms were relieved in every case, and in some of the cases certainly the aneurismal sac became smaller.

I fancy that in no department of science is the advice *audi alteram partem* more needed than in therapeutics, and the value of Dr. Rankin's records was greatly increased by the control records from other quarters. Mr. D'Arcy Power and Mr. Colt had given five injections of gelatin to a man aged twenty-nine years for an abdominal aneurism without producing any definite alteration; and another case was mentioned in which there was apparently no improvement from the injection, which was followed by rigors and collapse. One case died of tetanus as a result of this gelatin treatment under Dr. Maguire's care, but seven out of eight of his cases had shown definite improvement.

As I close this letter the first Fitz-Patrick lecture has just been given at the Royal College of Physicians by Dr. J. F. Payne, dealing chiefly with medicine in the Anglo-Saxon times. There is no need for me to abstract these lectures here; they will be published elsewhere fully, and no doubt will be widely read if they are all as interesting as the first. We may hope that this newly established lectureship will do much to stir up interest in the history of medicine, and to save some of the "blameless physicians" of the past from oblivion.

PARIS LETTER.

By R. H. Turner, M.D. (Paris).

At the recent meeting of the Academy of Medicine, Professor Dieulafoy described a case of tetanus which he had seen in his service, and which had been caused by an injection of gelatin. The patient was a woman suffering from tuberculosis, and the injection was made to arrest a hemorrhage from the lungs. Eleven days afterward the first signs of tetanus made their appearance, and death took place in seventy-two hours. The site of injection was examined, and a small abscess, containing three cubic centimeters of thick pus, was found. Cultures both aerobic and anaerobic were made, and by means of the latter the bacillus of Nicolaier was demonstrated. The gelatin which had been used was examined and found to contain the bacillus. It is worthy of remark that the solution injected had been sterilized at boiling point for half an hour. Professor Dieulafoy recalled several other cases, and stated that twenty-three deaths had been reported during the last two years. He described the method used by Merck to insure complete safety, and said that the preparation of this solution should be regulated. Professor Dieulafoy said he had never employed it and never should. (The injection had been made by the house physician who was on service.)

Intestinal lavage in the treatment of mucomembranous enteritis has been criticized recently, and various defects have been found with this treatment. which is carried out so extensively at Plombieres. Dr. de Langenhangen, who practices in this watering-place, has sought to refute the arguments adduced against the treatment, and he shows in an article published by the *Presse Médicale* that it is important to follow out a certain technique. The irrigation should be done with one to two liters of water, at a temperature of 35° to 48° C., and the patient should first lie on his back, then slowly turn over on his right side. At least a quarter of an hour should be allowed for making the injection. Dr. de Langenhangen examines successively the criticisms that have been made, such as this treatment favoring atony of the intestine, causing contracture, producing dilatation of the colon, and increasing the intestinal irritation. He admits that in a certain number of cases there is no good result from this procedure, but considers that this is the case with all forms of treatment.

An observation of apparent cure of hypertrophic cirrhosis has been published recently by Dr. Galliard, physician of the Paris hospitals. The patient was tapped and eight liters of liquid was removed. She was put at first on a strict diet of milk, and given daily an enema containing a filtered maceration of 125 grammes of a pig's liver. The condition of the patient improved shortly after, and the regimen was slowly modified. The patient is now seemingly cured.

On the 31st of May the new establishment at Vichy was officially opened in the presence of the Minister of Public Works, and a large number of medical men were invited for this occasion. Five years ago the Vichy Company signed a new contract with the State, which owns the springs, promising to pay yearly about $200,000, and to spend $2,000,000 in improvements, half of which would be ultimately reimbursed by the State. The town of Vichy was also to spend a million dollars on improving the sanitary condition of the place. It is not surprising that so much money should be spent on this resort, as the number of patients that come here is very large, having increased from 6,000 in 1852 to 80,000 in 1902. Vichy existed in the time of the Romans, being called Vicus Calidus, and ruins of the bath house were found in 1835. Madame de Léirgné visited the waters in 1676 to be treated for an attack of rheumatism which had lasted two months. This disease is no longer treated to an extent at Vichy, though Madame de Léirgné derived great benefit from the waters.

A large establishment was begun during the reign of Louis XVI., but was only finished in 1830. The number of bath tubs (92) was, however, insufficient, and it was found necessary to increase them. The new establishment is undoubtedly the largest of its kind in the world, and every method of treatment can be carried out, such as douches, douche-massage, carbonic acid baths. The douche-massage, which is a specialty of

Vichy, consists in massage under a fine spray of hot water. Architecturally the establishment is very impressive, and is an example of the good taste that is shown in such construction in France.

The watering-places to be visited this year by Dr. Carron de la Carriére and Professor Landouzy during their fifth excursion are situated in the southeastern part of France, near the Pyrenees. The physicians taking part in this trip are to meet at Toulouse, a most interesting town of Southern France, and will visit successively Salies-du-Salat, Aulus, Aix, Carcassonne, Le Vernet, Amelie-les-Bains, Banyuls, Lamalon, Montmirail, Vals, Lyons. The journey, which takes one through some of the finest scenery in France, is to be undertaken on the 10th of September, and will last till the 23d of the same month.

At a meeting of the Society of Therapeutics held on the 24th of June, Professor Huchard, the sucessor of Potain as a heart specialist, made some remarks on the pernicious effects of the Nauheim treatment on certain patients who have hypertension. Clinically heart affections can be divided into two categories—those where there is valvular trouble with hypotension, and those where there is arterial disease with hypertension. In the latter cases most serious results may follow the use of the Nauheim treatment. Dr. Huchard presented three observations of patients who had died with acute symptoms of hypertension after a season at Nauheim. The first category of patients may be ameliorated by the use of carbonic acid baths, but in such cases it would be better to send French patients to some place nearer home, such as Chatel-Guyon, Saint Alban, Royat.

PRURITUS.

To the Editor of the THERAPEUTIC GAZETTE.

SIR: Being of late years a sufferer from anal pruritus, consequent to piles and disease of the rectum, incurred in the United States military service from 1862 to 1865, I have tried many lotions, salves, and injections. The only one that has proved in any degree curative is a rectal injection of one-half ounce of a mixture of equal parts of extract witch-hazel and fluid extract ergot.

The effect, in my case, of the use of a rectal tube with hot water, as advised by Dr. Edmund Andrews, was a pleasant relief the first and second nights, with much aggravation of the pruritus following the third injection. The aggravation followed the desquamation caused by the desiccant action of the heat. All salves are uncleanly. J. T. CURTISS, M.D.

DWIGHT, KANSAS.

Notes and Queries.

MEDICAL "MOTHER GOOSE."

"Paterfamilias" writes a letter to the *St. Bartholomew's Hospital Journal* for March to the effect that much valuable instruction is lost by teaching children nursery rhymes which are quite nonsensical. For the children of medical men he suggests that the old rhymes might be altered. From among the examples which he gives we take the following:

Sing a song of sickness, yellow in the eye,
Four-and-twenty gall-stones choledecto-my!
When the wound was opened, the bile began to flow;
When the deuce it's going to stop the doctor doesn't know!

Or,

Three blind boils!
See how they run!
They all ran after the farmer's' wife
Had cut off their heads with a septic knife;
You never saw such a mess in your life
As three blind boils.

The March number of *King's College Review* is not confined to the medical side of King's College, but medical matters are dealt with in a fair proportion of its pages. From an instructive history of pathology we extract a nursery rhyme which would appeal to "Paterfamilias," whose letter to the editor of the *St. Bartholomew's Hospital Journal* we have already referred to:

Sing a song of sepsis,
Pockets full of pus;
Half a million cocci;
Patient wuss and wuss.

When the wound was opened
How the surgeon sings—
"Nasty bad condition
To occur at King's."

—*Lancet*, May 9, 1903.